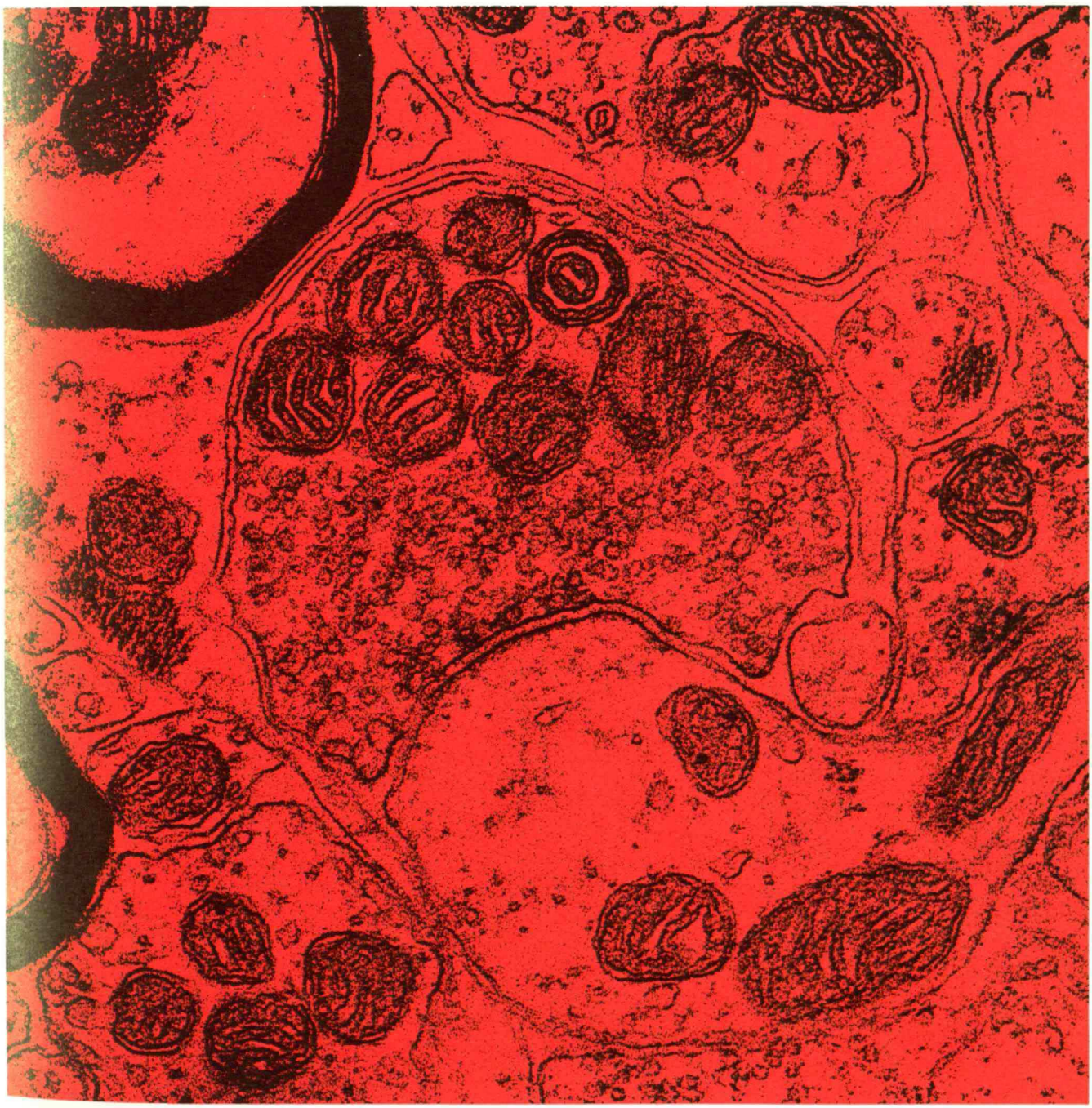
Technology Review

Edited at the Massachusetts Institute of Technology

December, 1966

The Biological Bases of Learning



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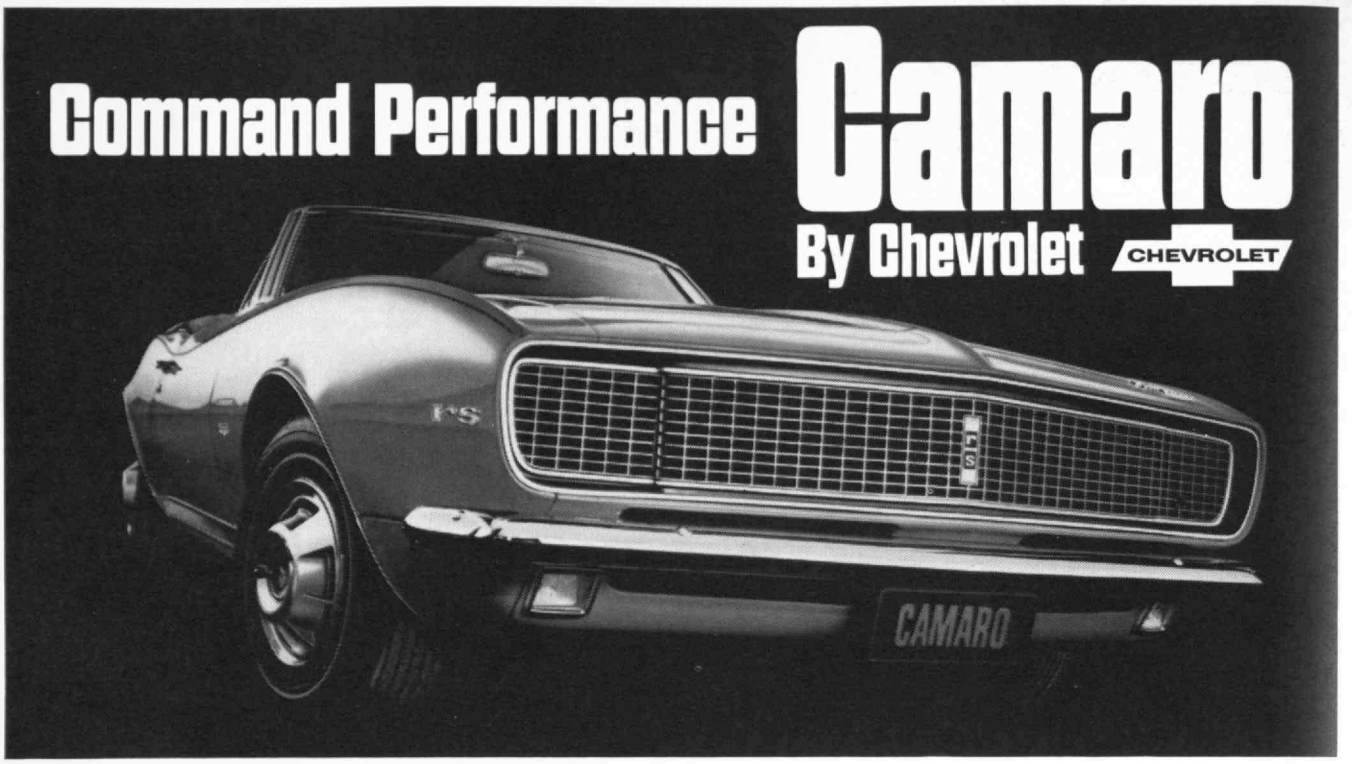
Command Performance Camaro By Chevrolet



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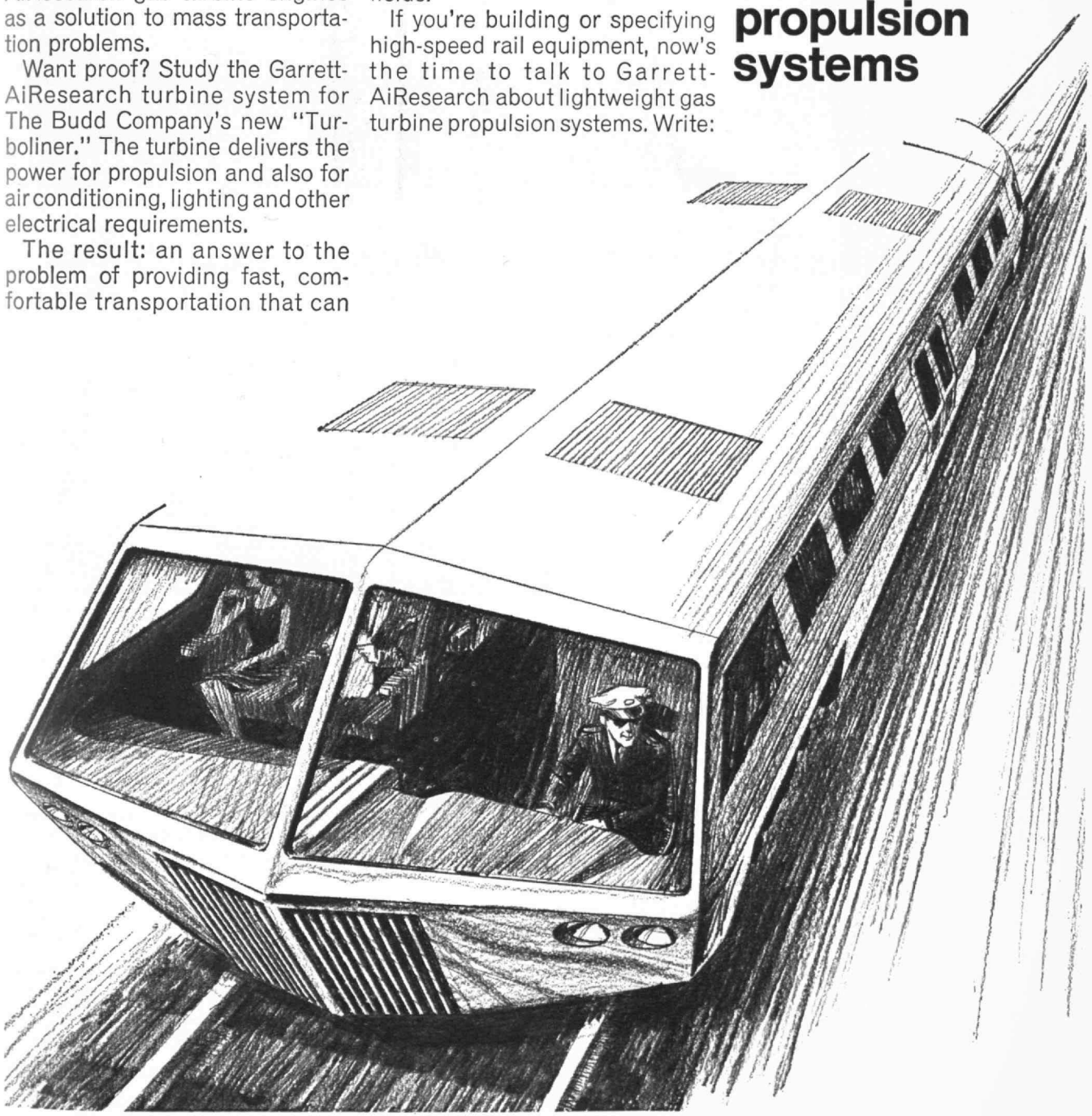

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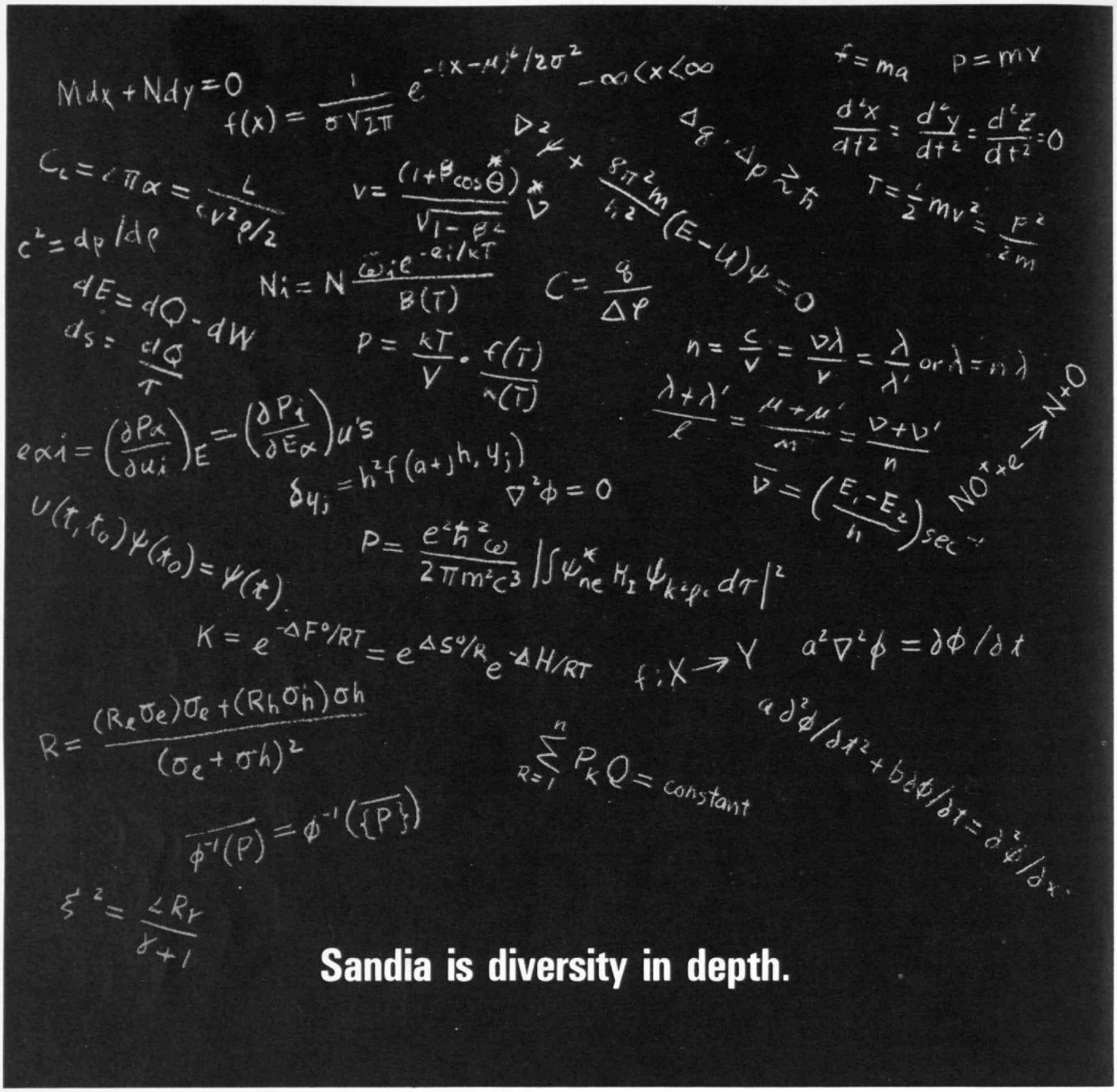

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Review on Science

UFO's: Their Day in Court

By Robert C. Cowen, '49

Flying saucers are real—as real as a wind-borne sheet of newspaper gleaming in the sunlight, as real as the orb of Venus distended by an imaging effect of the atmosphere.

They are also as real as hundreds of reports by credible eyewitnesses of phenomena that have defied explanation. These are the true unidentified flying objects (UFO's). They are so designated in U.S. Air Force files to separate them from cases that obviously can't be explained because of a lack of data.

Thousands of "saucers" have been identified as familiar objects seen under unusual conditions or as bizarre optical effects of the air. Now the real UFO's are to have their day in court. It will be a testing time for scientists as well as saucers.

The $313,000, 15-month Air Force study contract with the University of Colorado announced in October is just the beginning of a scientific attack on the mystery of the "unknowns." The contract may be extended. When the study is finished, its methods and findings will be reviewed by a special panel of the National Academy of Sciences to be named at that time.

Throughout this long study, members both of the team headed by Colorado physicist Edward U. Condon and eventually of the Academy panel will be on their mettle to give serious, objective attention to a subject generally ridiculed within the scientific community.

The Pressure of Ridicule

The main reason why there has been no such thorough public study before has been social pressure that springs from the ridicule. Many scientists consider the subject "kooky." It can be embarrassing, even damaging, for a scientist to take it seriously.

J. Allen Hynek, head of the Dearborn Observatory of Northwestern University, is an exception. He has enough standing to undertake serious UFO research without suffering career damage. He has a professional reason to do so as official consultant to the Air Force UFO investigating team. The contract with Colorado is the result of long persuasion on his part.

Scientists who have ignored or discredited the challenge of the UFO's, thus discouraging research, have closed off a field of inquiry that might yield valuable knowledge. Now that the Condon study is getting under way, Dr. Hynek has tackled this prejudice in an open letter published in *Science*, the magazine of the American Association for the Advancement of Science. Briefly, he deals with seven "misconceptions" as follows:

"1) *Only UFO 'buffs' report UFO's.* The exact opposite is much nearer the truth. . . .

"2) *UFO's are reported by unreliable, unstable, and uneducated people.* This is, of course, true. But UFO's are reported in even greater numbers by reliable, stable, educated people. . . .

"3) *UFO's are never reported by scientifically trained people.* This is unequivocally false. . . .

"4) *UFO's are never seen at close range and are always reported vaguely.* When we speak of the body of puzzling reports, we exclude all those which fit the above description. I have in my files several hundred reports which are fine brain teasers and could easily be made the subject of profitable discussion by physical and social scientists

"5) *The Air Force has no evidence that UFO's are extraterrestrial or represent advanced technology of any kind.* This is true . . . but . . . as long as there are 'unidentifieds,' the question must remain open. . . .

"6) *UFO reports are generated by publicity.* One cannot deny that there is a positive feedback, a stimulated emission of reports, when sightings are widely publicized, but it is unwarranted to assert that this is the sole cause of high incidence of UFO reports.

"7) *UFO's have never been sighted on radar or photographed by meteor or satellite tracking cameras.* This statement is not equivalent to saying that radar, meteor cameras, and satellites have not picked up 'oddities' . . . that have remained unidentified. It has been lightly assumed that, although unidentified, the oddities were not unidentifiable as conventional objects."

The subtlety with which even known atmospheric or psychological effects trick people into seeing flying saucers is astounding. If you would like to know more about this, you might enjoy the discussion of Donald H. Menzel, Director of the Harvard College Observatory, and Lyle G. Boyd in their book *The World of Flying Saucers* (Doubleday & Co., Inc., 1963). The UFO's the Condon team will tackle present a deeper mystery. They may be physical phenomena. But, if they are not, the psychologists may have an intriguing puzzle on their hands.

Gods and Angels?

Swiss psychiatrist C. G. Jung has suggested that the saucers may be the Twentieth Century equivalent of gods and angels. In his book *Flying Saucers: A Modern Myth of Things Seen in the Skies* (Harcourt, Brace, and Co., 1959), he notes that, in times of social stress, the human mind consciously or subconsciously tends to look for an otherworldly savior. It sees visions of this saving influence projected in terms of the imagery of the day, in this case in terms of a transcendent technology.

Also, noting the tendency of scientists to dismiss saucer sightings as illusory, he said, ". . . if it is a case of psychological projection, there must be a psychic cause for it. One can hardly suppose that anything of such worldwide incidence as the UFO legend is purely fortuitous and of no importance whatever."

This is, in itself, a good statement of the case for the Condon study. It is time to get at the underlying reason for the fact that UFO's have constantly been reported from all parts of the world for nearly two decades.

There is no brief for the claim that the American Air Force is suppressing information that would show the UFO's to be extraterrestrial. But the Air Force has been prone to grasp at handy and phony explanations to try to quiet a "saucer scare" or satisfy the insistent questions of a congressman.

The lights over Texas in August, 1965, were a case in point. Many people saw them, a bright light surrounded by lesser lights. They appeared after nightfall. Although no object was seen, the lights might well have been on some craft. The Air Force said no known man-made craft was involved. Then it tried to explain away the sightings as the effect of a temperature inversion in the atmosphere. This "explanation" fell apart as witnesses were queried. The lights became a genuine UFO.

The quickie explanation has merely made the Air Force look silly and strengthened the hand of its critics. Many scientists have likewise done science a disservice by taking a supercilious attitude toward saucer research and inhibiting free inquiry.

Now both the Air Force and the scientific community have an opportunity to right the situation. If the Condon investigation and the NAS review are conducted thoroughly, objectively, and without any preconceived notions, they will help overcome the "sin" charged by Dr. Hynek recently in *Science*.

"I have begun to feel," he says, "that there is a tendency in Twentieth Century science to forget that there will be a Twenty-first Century science, and, indeed, a Thirtieth Century science, from which vantage points our knowledge of the universe may appear quite different. We suffer, perhaps, from temporal provincialism, a form of arrogance that has always irritated posterity."

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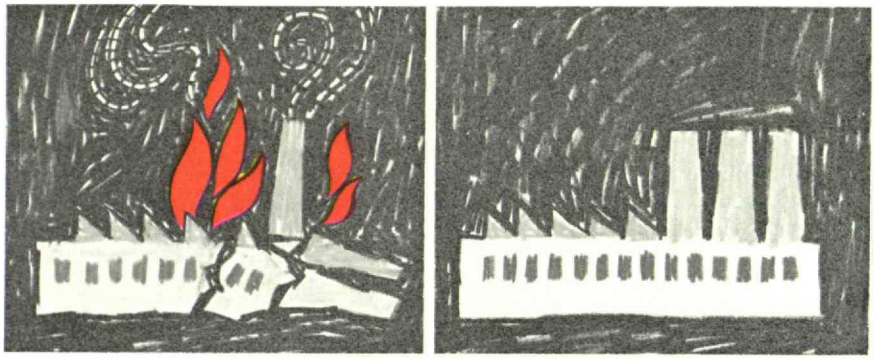

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Review on Books

History: Three Kinds

By Joseph Mindel

In our time, many public and private actions appear to take place in a translucent bubble of presentness, as if the actors wish to exclude a past that only emphasizes for them the magnitude and uniqueness of contemporary problems. It is, of course, a fruitless effort. "Historic continuity with the past is not a duty," Justice Oliver Wendell Holmes said, "it is only a necessity." In *Men, Machines, and Modern Times* (M.I.T. Press, Cambridge, Mass., 1966, 235 pages, $5.95) Elting E. Morison not only serves this necessity, but also provides an interesting landscape for those who choose to walk the bridge he has constructed.

History as Process

In 1962, Professor Morison, Sloan Fellows Professor of Management at M.I.T., participated in a seminar following one of the Compton lectures given by I. I. Rabi, Nobel laureate in physics, who had raised the question, "Why not a scientist for President of the United States?" I remember the sense, if not the exact words, of Professor Morison's comment: "If Dr. Rabi has a scientist for President, I want a classical Greek scholar as head of the Atomic Energy Commission. His understanding of tragedy and the human situation would provide an essential perspective." Perspective in all dimensions of human experience is the necessity, which only history can satisfy.

Professor Morison is concerned in this book with the origin and nature of technological change, the resistance to it, and its impact on society. He relates a series of historical events, which he calls variously case histories, episodes, or anecdotes, and describes the development, the ebb and flow, of the ideas to which they give rise. He is aware of the temptation to "overload the anecdote with general meaning." He also notes that "much if not most of my information is derived from the experience of the Nineteenth Century. It serves therefore more as the substance for illuminating parable than as confirming evidence in a contemporary situation." The disclaimers are understandable but, I think, not required. He is not synthesizing an organized system for which evidence is possible or needed. It is likely, in any event, that all we can ask of history is the suggestion of a framework, a metaphor, by means of which to understand the present. Professor Morison may speak of parable, but he offers a sparkling profusion of stories and ideas.

We learn how only the intervention of President Theodore Roosevelt overcame the Navy's resistance to new techniques that increased a hundredfold the accuracy of gunfire at sea. He traces for us the invention and application of the Bessemer steel process; he tells why the Muster Roll of the U.S. Army was maintained, and how *Wampanoag,* the fastest steamship in the world when it was commissioned in 1868, was sold out of the Navy a few years later; he describes the dispute over the convoy system during World War II; he shows how pasteurization, discovered by a Frenchman in connection with wine, was first applied in Denmark to cheese, then in Germany to beer, and finally to milk.

We are not to expect a ready-made outline of the process by which technological changes originate and are introduced into the social mechanism. Circling around the central problem, using, so to speak, the technique of peripheral vision, Professor Morison generates more ideas than there is space to describe—the role of chance in invention; the inventor as rebel against the establishment; resistance to change as preservation of the existing system; why there are many heroes of medicine, law, and science but very few in engineering; the tendency to reduce human situations to quantitative measures.

From each historical excursion, Professor Morison returns to the implications for the present. His statement of the broader questions with which he is concerned is worth quoting. "The system of ideas, energy, and machinery we have created to serve some essential human needs, it now appears, may, if not sufficiently tended, shrink human beings to the restricted set of needs the system was designed to satisfy. Or, to put it another way, the system may have acquired a mass and scale and intricacy and internal rate of change that make it increasingly difficult for human beings to live comfortably and fully within it. Or, to put it yet another way, we may be caught in the irony that at the very moment when by our wit we have developed the means to give us considerable control over our resistant natural environment we find we have produced in the means themselves an artificial environment of such complication we cannot control it."

Defining the problem is an essential first step, but asking the right questions, difficult as it may be, is still easier than giving answers. Professor Morison indicates the direction in which answers may be found. The history of pasteurization suggests that technological applications can be modified by the needs and customs of society. What is required, then, is to replace a culture that evolved in relation to simpler, lower-powered, more stable technical systems by creating a new culture that takes into account the characteristics of the new technology. This involves both the acceptance of appropriate values and the development of new social techniques. Stated baldly, the proposals, which are put forth as modest reflections, acquire an unintended grandiloquence. They deserve elaboration in greater detail.

History as Biography

If Professor Morison's book is an example of history as process, *Pepys' Diary and the New Science* (University Press of Virginia, Charlottesville, 1965, 189 pages, $5.00) represents history as biography. Marjorie H. Nicolson, who recently retired as chairman of the Department of English and Comparative Literature at Columbia University, describes the science of the early years of the Royal Society as seen through the eyes of Samuel Pepys, especially through his famous diary. Pepys was not only a member but was installed in 1684 as President of the Royal Society, thus justifying the description, "gifted amateurs," for an assemblage that included talented associates like Hooke and Boyle.

Although some subjects are treated at more scholarly length than the general reader may desire, judicious selection yields interesting accounts of chemical experiments, experiments on air pressure, optical instruments, kidney stones, and blood transfusions.

History as Fact

Ancient Greek Gadgets and Machines (Crowell, New York, 1966, 152 pages, $4.95) by Robert S. Brumbaugh, Professor of Philosophy at Yale University, is an entertaining example of history as fact. We are inclined to think that the Greeks, apart from Archimedes and Hero, had no mechanical interests, aptitudes, or contrivances, because we do not read about these in their literature. Professor Brumbaugh believes that this was because the Greeks did not consider inventions and gadgets worth writing about. Fortunately Professor Brumbaugh does.

From archaeological sites and museums as well as a specialized reading of the literature, he has collected a small bookful of devices, including self-opening temple doors, coin-operated dispensing machines, flush toilets, wine coolers, starting gates for races, town water clocks, and assorted automata such as singing birds, hissing serpents, dancing girls, and an automatic theatre doing a five-scene play.

Review on Education

The 89th: A Record

By Corbin Gwaltney

By the time the 89th Congress of the United States decided to call it quits this fall, it had written a record of legislation affecting America's colleges and universities that was without precedent in the history of the Republic.

The 89th's work involving education started within a few days of the convening of its first session in January, 1965. One the very last day of the second session in late October, 1966, it was still going on.

By then Congress had:

- Put the Federal government into the business of supporting the arts and humanities, by establishing two national endowments for the purpose.
- Resolved a long-standing conflict over aid to church-related schools and passed a measure providing billions of dollars in aid to elementary and secondary education—a first-session action that was confirmed and extended in the second session.
- Passed—and later extended—a Higher Education Bill providing billions for the nation's colleges and universities.
- Provided numerous programs to aid medical education in the United States —including loans and scholarships to students in the health professions, assistance to medical libraries, and extension of earlier construction programs.
- Extended a program of loans to enable colleges and universities to expand their student housing facilities.
- Enacted a new "GI Bill of Rights," authorizing payments to veterans for educational expenses.
- Set up a "Sea Grant Colleges" program, which would enable universities, colleges, and other research groups to explore ways of developing marine resources. (*see page 40.*)
- Approved a program of grants to colleges and universities to upgrade their undergraduate and graduate work in international studies.
- Authorized a four-year liberal arts college, a two-year community college, and a technical institute for the District of Columbia.
- Approved numerous programs, from water-pollution control to medical research, national defense, and demonstration cities, which will involve colleges and universities in research and training and eventually result in the expenditure of more billions on the nation's campuses.

Even more Federal largess would probably have showered upon the colleges and universities, had it not been for the twin threats of inflation and Vietnam. Congress made several moves toward substantially enlarging the Administration's requests in the field of higher education, but President Johnson was generally successful in holding the line. When all of the appropriations bills had been passed, it was evident that this year's spending in higher education would not differ greatly from the $4.8 billion which the President asked for.

Actual appropriations, after all, are what turn the programs which Congress authorizes into real, going concerns. The fact that the Senate and the House of Representatives have passed a bill authorizing a new Federal activity means little, in practical terms, until money is appropriated to make it go.

Thus the National Teacher Corps, a program which the 89th Congress authorized in its first session last year, is barely breathing today. President Johnson requested $34.3 million for the Corps this year—but after the House of Representatives eliminated all funds for it, the program was lucky to wind up with $7.5 million which the Senate managed to restore. This is barely enough to subsist on, and Corps officials are freely predicting that the whole idea may die unless the next Congress acts quickly to provide enough money to resuscitate it.

Similarly, no funds were actually appropriated for the new Sea Grant Colleges and for the international education program. Probably they'll have better luck next year in the 90th Congress, which is scheduled to convene January 10.

The Higher Education Bills

Of greatest importance to colleges and universities were the big omnibus measures: the Higher Education Act of 1965 and its 1966 counterpart. Here are some of these provisions:

- Guaranteed, reduced-interest loans to students who don't have reasonable access to such loans under a state or private lending program. The Federal government is authorized, under this program, to advance money to the reserve funds of state and private loan plans.
- Work-study programs already had been established for students from low-income families, and this year they were liberalized to permit participation by others, as well.
- Fellowships for teachers—5,000 last year, 15,000 this year, and 20,000 in fiscal 1968 were authorized.
- Undergraduate facilities. To improve undergraduate instruction, the Federal government was authorized to help colleges buy laboratory and other special equipment and acquire closed-circuit television facilities.
- More money for campus construction. The 89th Congress greatly in-

creased the Federal funds authorized for undergraduate and graduate buildings.

- Aid to college libraries, under a program which provides money to help the libraries buy books and materials, to help train library personnel, and to help the Library of Congress expand and improve its catalogue services.
- Aid to "struggling" colleges and universities, under a program to help strengthen institutions of higher education which now are in marginal financial condition.
- Educational opportunity grants, scholarships to promising, exceptionally needy students for their first year in college, plus enough money to continue the awards so that the recipients can complete their education.
- Community service programs, to help colleges and universities set up programs dealing with problems in rural, urban, and suburban areas—with particular emphasis on the last two.

The passage of the Higher Education Act was historic. It confirmed a relatively new philosophy of government: that education *per se* is a subject of national concern.

This is nowhere stated, or even hinted, in the Constitution of the United States. For this reason, together with a long-held tradition that education was the business of the states, not of the Federal government, Congress for years had limited its actions affecting education to those which could be taken under some other banner than the goodness of education itself.

The national defense, for instance, had provided the Constitutional basis, in the minds of many Congressmen, for much of the Federal government's earlier involvement in higher education. A concern for agriculture and the mechanical arts had provided the basis for other programs. And much of the money which the government spent on the campuses for research was offered on a *quid pro quo* basis: the government, in effect, was simply buying research for its own purposes, such as defense, just as it would buy research and hardware from commercial and industrial suppliers.

Shortly after the assassination of President Kennedy, the 88th Congress passed the Higher Education Facilities Act, a measure providing the colleges and universities with funds for buildings and equipment. Signing the bill into law, President Johnson noted its historic nature and dubbed its originators "The Education Congress."

But it was the next Congress, the 89th, which really earned that title. The 89th passed more education legislation than all of 88 predecessors combined.

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Puzzle Corner

By Allan J. Gottlieb, '67

Several readers have sent problems and solutions to me; they will all appear in next month's issue. Due to a variety of personal crises and a plea from my editor to "keep it short this month," I shall dispense with the usual small talk and get right down to business.

Problems

8—Prove that for any even integer m greater than 2, there is an infinity of odd integers not the sum of a prime and a positive power (>1) of m.

9—Show that there are irrational numbers s and t such that s^t is rational.

10—Assuming

$f(n) = \sqrt{n + \sqrt{n + \sqrt{n + \ldots}}}$

converges for all integers n, show that given any integer y there is an integer n such that $f(n)$ converges to y.

11—For which positive values of a and c is $a^n \cdot n! > c \cdot n^n$ true for every positive integer n?

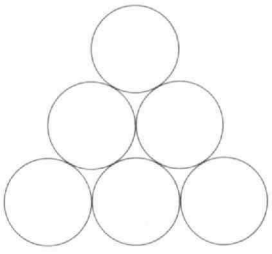
12—What is the largest number of queens which can be placed on a chess board such that no three queens lie in a straight line? Any solution greater than 14 will be printed.

The Speed Department

13—Assuming that B•S is non nonzero, show that the following relation is impossible.

$$\begin{array}{r} \text{SEX} \\ +\ \text{I S} \\ \hline \text{BEST} \end{array}$$

14—Consider six dimes forming a pyramid as below:



Change the figure into a circle by making four moves, each of which consists of sliding a dime to a new position where it is tangent to exactly two others.

Solutions

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What the Cell Knows and How It Can Learn

The imprint of experience is embodied in cell structures as cultural advance is embodied in human institutions

By Salvador E. Luria

The cell is the organic substrate of all phenomena of life. In its composition and organization we must look for the basis of all vital manifestation, including learning. This restricts and yet emboldens our search; the biologist cannot fall back on any vitalistic principle, endowing matter with mind. Even a dialectical invoking of supracellular, organismic levels of complexity as the seat of the higher animal functions does not relieve us from searching the cell for the unit mechanisms underlying these functions, just as invoking the complexity of social interactions would not justify an anthropologist searching the basis of culture outside human beings. The human organism is a plurality of cells, just as human society is a plurality of men. Moreover, each man is the product of a single cell and all it knows and all it learns must be encoded or imprinted or incorporated into patterns initially provided by that cell.

What Does a Cell Know?

There are two classes of repositories of information in a cell: deterministic information and historical information. The *deterministic information* is encoded in the genes, macromolecules of nucleic acid which represent the linear tapes or templates with directions for the synthesis of enzymes and other proteins. In turn, the proteins are the machine tools and structure elements that provide and organize the machinery for the chemical tasks of the cell: compartmentalization, selective transport, and chemical transformation of substrates.

There are a few thousand genes in a bacterium, a few million in a human cell. These genes determine *what a cell can make*: whenever a gene works, a certain product will be made.

But not all this information is used all the time: in fact, most of the genetic information is not used most of the time. A highly specialized cell, for example, may use only a very small proportion of its genes, making only one or a few gene products. This is because the function of the genes is directed by another source of information, what we choose to call *historical information*. By this I mean the material imprint of all circumstances, past and present, that have been acting on a cell. Some of these are purely external, some are themselves expressions of gene function.

For example, if we remove chemically the cell wall of a bacterium, its descendants cannot start a new wall, even though they can make all the chemical pieces for a cell wall. The preexistent wall is needed to provide the framework, the informational background to assemble the pieces made under gene directions.

A third example is that of a cell that will make a certain enzyme, needed to carry out a chemical reaction, only when the proper chemical substrate is present in the medium. Here it is the external stimulus that provides the directing, historical information.

How Does a Cell Use Its Knowledge?

The key to understanding how the two sources of information—the deterministic, or genetic, or template information, and the historical, or extragenetic, or framework information—are utilized is the question of the control of gene function.

Another case in point is that of a unicellular animal called Paramecium, which has on its surface many rows of hairs or "cilia," all oriented in the same way. By an astute trick of biological surgery one can reverse the direction of the hairs in a patch of the animal's skin. From then on, in all of its descendants, the gene-produced materials that go to make hairs orient themselves in the new fashion at the spot corresponding to the patch.

The genes of a cell have the intrinsic information for making thousands or even millions of specific macromolecular products, but no cell makes more than a small fraction of them. The control mechanisms that dictate which part of the genetic information will be used and which will not are beginning to become known, at least in bacteria.

Some genes make substances called *repressors*, which prevent other genes from functioning unless a signal comes from the outside; that signal may be a chemical that inactivates the repressor or changes its specificity.

The astonishing appropriateness of cellular functions observed in bacteria—making enzymes when they are needed, reproducing various structures in precise sequence as required—is the result of the precision and effectiveness of these regulatory systems. The cell calls on genetic information as a computer calls on memory.

Does a Cell Learn, and How?

A computer "learns." Additional information is added to its memory and can be recalled by appropriate signals. Learning, according to psychologists, is "a lasting modification of stimulus-response pattern due to experience." An organism such as man can learn in this sense.

At the cellular level we have two problems: First, does a cell learn? Second, what is the cellular basis of organismic learning?

PHOTO: JEAN-PAUL REVEL, HARVARD MEDICAL SCHOOL

This electron micrograph of a mouse tumor cell shows a large nucleus (N) and nucleolus (n) and relatively little cytoplasm surrounded by the cell membrane (cm). The mitochondria (m), which are the power plant of normal cells, are poorly developed. This is a very unspecialized cell. Enlargement about 10,000 x.

Since cell functions depend on two sources of information, template information and historical information, there are two corresponding ways of changing the store of information: changes in genes and changes in their historical setting. Genetic changes, either mutations or genetic transfers, do occur in cells. This kind of learning provides the substrate for the trial-and-error process of natural selection, but it is not learning in the psychologist's sense. No one in his senses has yet made a case for gene mutation as the basis of cellular learning.

There remains another level at which cells can learn: that of their actual state, which is the result of their previous history. In terms of material cellular phenomena, we may split this area of changes into two interrelated ones: changes in gene function and changes in organization of gene products.

In a simple unicellular organism like a bacterium, we observe some elementary examples of cellular learning. For example, a bacterium may, under stimulation by a given chemical compound, start making a protein that serves to concentrate that compound inside the cells; because of this "pumping" mechanism, a high level of stimulation can then be maintained by very low external concentrations of the compound. When the compound is removed, the concentrating protein is not made any more; but the concentrating ability does not disappear completely, because the molecules of the concentrating protein are passed on intact to daughter cells generation after generation, and as long as a cell has even one such molecule it can still concentrate the compound. In other words, the learned pattern of cellular response, being embodied in a stable molecular species, is lost by dilution only. If no cell division occurred it would not be lost at all.

Learning and Differentiation

This brings us to the crux of the matter. In a complex multicellular organism specific functions become delegated to specialized cells because of stable *differentiation*. That is, once certain functions or structures of cells become manifested, they can persist because the differentiated cells do not multiply. This is true, for example, of nerve cells and muscle cells. Even if under exceptional circumstances the differentiated cells resume division, they retain some of the structures they have acquired by differentiation. In a rat, a cell that has learned to make liver enzymes may divide a few times if part of the liver is removed, but it will soon return to make liver enzymes.

WHAT is the basis of the specialized behaviors of differentiated cells? We can only guess, on the basis of models from bacteria or other microbes. A reasonable guess is the presence of feedback mechanisms involving either specific gene products or specific local patterns of organization, or both. Thus, response to a certain stimulus during differentiation may create a self-maintaining condition that increases the sensitivity of the cell to that stimulus or other specific ones.

In this sense the differentiated cell has learned.

The sensitizing condition might be the continued presence either of a stable gene product (as in the mechanism we have described above for bacteria) or of a stable pattern of gene products somewhere in the cell. In other words, as long as the cell persists, its structure and organization *are* its memory.

Such learning, it may be objected, is not learning at all: it is an increase in specialization. But this may be all there is to cellular learning during differentiation.

Cellular and Psychological Learning

What about the cellular basis of higher forms of learning? I venture to suggest that even at the level of behavioral and conceptual learning the underlying cellular mechanism will prove to be of the kind described above: persistent changes in the molecular composition and structural organization of cells. By this I do not mean the production of molecular species that are coded representations of the previous experiences. In fact, I regard with deep skepticism the repeated claims that specific learned behaviors can be transmitted from animal to animal by brain extracts.

What I mean is that the nervous system consists of cells (which are in fact the most permanent cells in the whole body) and that the response of these cells to given stimuli modifies the response of the organism to future stimuli by leaving material traces. These traces are not in the form of specific "informational molecules," but in the form of specific stable gene products—enzymes and others—whose presence and mutual interactions alter the response of the cells to future stimuli. The altered response may be the expression of changes within the nerve cells, or of changes in the pattern of contacts among nerve cells, or in the pattern of connections between nerve cells and other cells. Thus the imprint of the past experience is embodied in cell structures as a new pattern of complexity in the same way as a cultural advance is embodied in patterns of human institutions.

The analysis of the nervous system, the marvellously efficient apparatus that permits learning, memory, and concept formation, is the subject matter of neurophysiology and neuropsychology. What the cell biologist can offer today is his basic conviction that all learning of organisms must ultimately be traceable to material changes in the molecular and supramolecular oganization of cells.

The first William Thompson Sedgwick Professor of Biology at M.I.T., Salvador E. Luria is widely known for research on the genetics of bacteria and the genetic influences exerted by viruses on the cells they invade. He studied at the University of Turin, came to the U.S. in 1940 to hold posts in several major universities, and came to M.I.T. in 1958 to establish a new program of microbiological research.

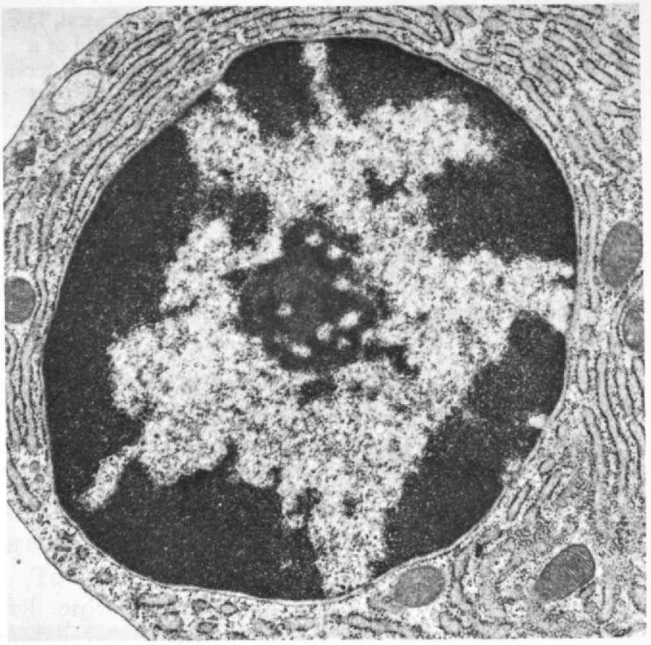


PHOTO: DON W. FAWCETT, HARVARD MEDICAL SCHOOL

This electron micrograph shows a cell specialized for production of antibodies. Comparing this cell with that pictured on the opposite page, note the vastly enlarged system of channels, along the walls of which the antibody proteins are synthesized, and the dense mitochondria, which supply the very high energy demands. Enlargement about 10,000 x.

Electron micrograph of a section of the cerebellum of a cat. The crescent-shaped structure above the center is the terminal of a nerve fiber, which makes contact with the body of another nerve cell. This is a *synapse,* through which nerve impulses are communicated. In both the nerve-fiber terminal and the cell body there are mitochondria (mit) whose function is to provide energy. The terminal is filled with vesicles (sv). It is at the level of the synapses between nerve cells—their numbers, size, and structure—that some of the changes brought about by learning are being sought. The area surrounded by a heavy dark band on the upper left corner is another nerve fiber. Enlargement about 50,000 x.

PHOTO: SANFORD L. PALEY, HARVARD MEDICAL SCHOOL

The Psychophysiology of Memory

Man's abilities to learn and to remember are at once the most powerful and most elusive achievements of the human brain

By Stephan L. Chorover

It is a simple yet compelling fact of nature that organisms tend to show greater interest in events that are new and unfamiliar than in those which are old and familiar. This implies a truly remarkable achievement: animals are indeed able to distinguish the new from the old, the familiar from the unfamiliar, the habitual from the novel.

The ability to *learn* is basic to this behavior. So is *memorization*—the process whereby learning effects are preserved, through which they have a persistent influence upon behavior. Although certain forms of memory may be identified in the functioning of some of nature's more primitive animals, nowhere is the process more complex, more important or more difficult to study than in the human brain.

Depending, as it does, upon direct observation and manipulation of the nervous system, research on the physiology of learning and memory relies inescapably upon the selective, careful and humane use of laboratory animals and only rarely upon studies of the human brain. Our present knowledge of the psychophysiology of memory is far from complete, but there have been several important recent developments in our understanding of how the brain works when we learn, remember, and forget.

Let us first consider what psychologists mean by learning and memory.

There are many human activities which everyone will agree count as illustrations of learning and memory. These clearly include acquiring a vocabulary, learning to play tennis or chess or to solve differential equations, memorizing a poem, developing the skills needed to drive a car or to use a typewriter. Many other activities and attitudes are not quite as obviously learned—but, indeed, upon scrutiny are clearly seen to be in the same category. These include the development of preferences and prejudices, the acquisition of social, religious or political ideals and attitudes, and the acceptance of numerous conventions that govern interpersonal behavior in a particular society.

A similar list of learned activities can easily be drawn up to apply to the behavior of rats, dogs, monkeys, cats, worms, and many other animals.

The defining characteristic of all learning from cell to society is that a change in behavior occurs as the result of an interaction between a living system (cell, human, or whatever) and one or more spatial and/or temporal events. Memory is the process whereby the learning effect is carried forward in time. Therefore we make the further assumption that memory entails a relatively permanent change in the system. (This change is often referred to as the "memory trace" or "engram.") We are concerned here with the problem of what takes place in the nervous system in animals and man during learning and memory. Our goal is to be as precise as possible about the structures and processes involved.

To reach for this goal, the discussion that follows will provide an overview of some of the accomplishments and some of the problems raised by a number of studies of learning and memory in man and in experimental animals. As we proceed, it will be apparent that man is still far from his goal of understanding the complex brain processes that underlie learning and memory.

There is an abundance of relevant data, but the evidence is not always orderly; many more questions are raised than can be answered.

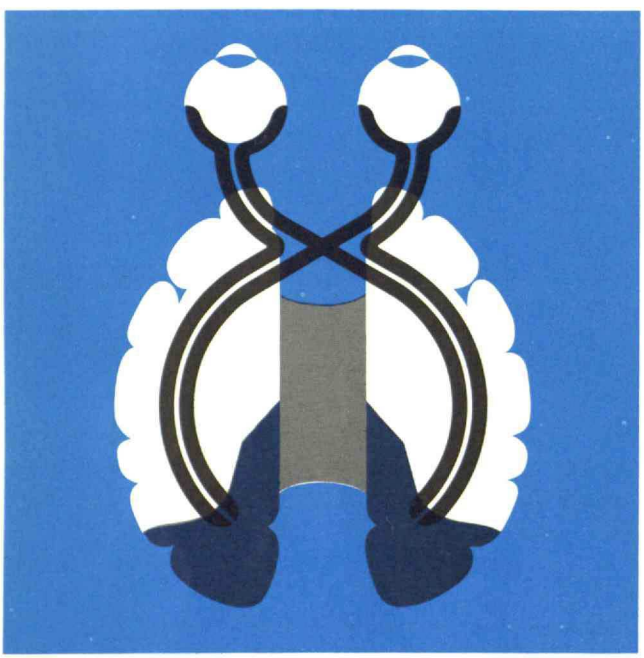
The first systematic psychological studies of learning and memory in man were made by a German scientist, Ebbinghaus, in 1815. Using lists of "meaningless" three-letter syllables, such as BOR, CUV, KER, GAR, etc., he carefully measured the course of memorizing and forgetting in human subjects. Almost 100 years later came the first English publication, in 1906, of Pavlov's monumental discovery of the conditioned salivary reflex and the development of systematic animal studies of learning. About the same time (1899), the maze was first used to measure learning in animals. Thus were first launched the two general kinds of methods, the conditioning method and the trial-and-error method, with which the great bulk of animal learning data have since been collected. Many variations of these procedures have been developed, and learning has been studied in hundreds of different ways. The broad goal of all of these is to specify the biological mechanisms that mediate the recording, storage and subsequent reproduction of experiential information.

The response of a system to injury may throw considerable light on its mechanisms. For this reason there have been many studies of the effect of brain damage and of traumatic loss of consciousness upon learning and memory.

The Search for Anatomical Correlates

Outstanding among these studies was a series of experiments performed over a 30-year period by Karl

The visual system in mammals is an exquisitely complex interrelation of optical and communications functions. Visual information coming from half of each light-sensitive retina is transmitted to the brain by a different nerve channel. Fibers from the half nearest the nose cross at a junction point called the optic chiasm. The result is that the right half of the visual field from each eye reaches one side of the cerebral cortex, the left half the other side. The two halves of the cerebral cortex, in turn, are interconnected by a massive fiber bundle called the *corpus callosum*.



Lashley who selectively destroyed specific brain areas in rats and studied the ensuing effects on learning and memory. In doing so, he was searching for the anatomical basis of the memory trace. In general, he found that the number of errors committed by animals increased with the amount of brain tissue destroyed. Contrary to the view that certain brain areas might be especially vital for learning and memory he found that only small differences could be attributed to the destruction of one or another part of the cerebral cortex (the most superficial area of the brain). Dr. Lashley concluded that learning depends upon the total amount of cortical tissue available but not on what particular tissue is available. He did not deny that certain areas of the brain might be necessary for certain specific functions, but he asserted that even within these, his principles of mass action (the more tissue the better) and equipotentiality (no strict localization of the learning function) applied to the cortex as a whole.

The significance of these classic experiments can be best summarized in Dr. Lashley's own words: "It is not possible to demonstrate the isolated localization of a memory trace anywhere within the nervous system. Limited regions may be essential for learning or retention of a particular activity, but within such regions the parts are functionally equivalent. The engram is represented throughout the region."

Thus, Dr. Lashley showed that the neural basis of memory is not likely to comprise an *isolated* connection or change at a *single* place within the 10 billion neurons of the brain. He suggested that a more widespread, multiple representation of the memory trace was more in keeping with his findings, and he concluded, rather despondently, that his series of experiments had "yielded a good bit of information about what and where the memory trace is not" but had discovered nothing directly of the real nature of the engram.

That was in 1950, and Lashley's comment indeed accurately summarized the then-existing lack of specific information about exactly where, in the brain, something changes when we learn.

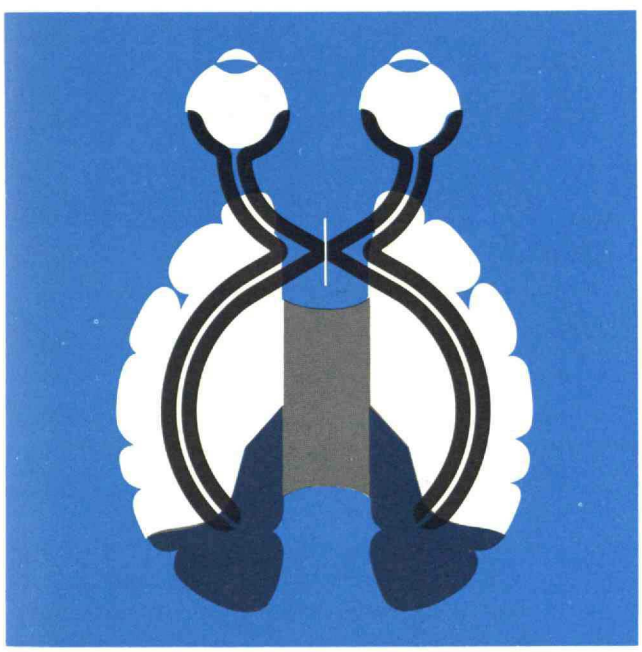
Studies Using Bilateral Symmetry

Significant and interesting developments have more recently resulted from the use of brain lesions to localize the memory process. Roger Sperry and his colleagues at the California Institute of Technology have taken advantage of the bilateral symmetry of the brain in their studies of learning and memory in cats and monkeys.

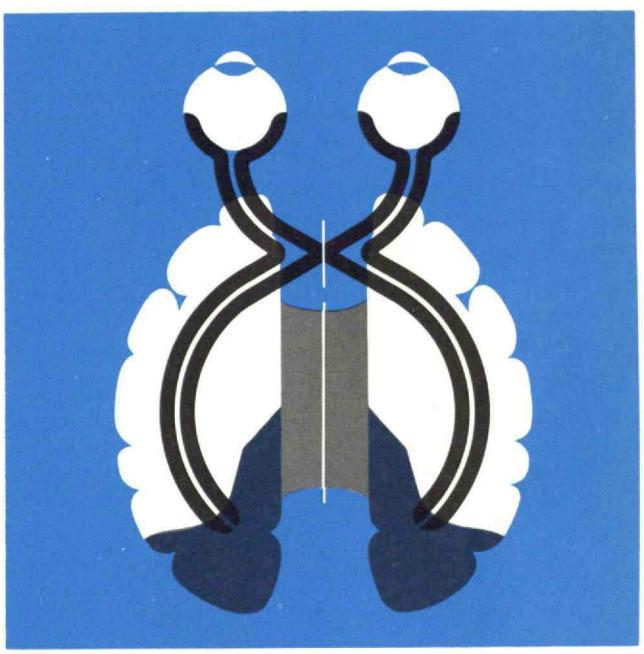
To understand the significance of these studies we must first consider the anatomy of the visual system in mammals. Visual information coming from the right and left halves of the visual world is projected upon corresponding temporal and nasal halves of the light-sensitive retina in each eye and transmitted to the brain by the optic nerves. Before reaching the visual areas of the brain the optic nerves from the left and right eye meet at a junction called the optic chiasm. At this point, nerve fibers coming from the nasal half of each retina cross over to the opposite side of the brain while fibers from the temporal half of each retina remain uncrossed. The uncrossed fibers join together with the crossed nasal fibers from the opposite eye, pass through a number of relay points, and project finally upon the posterior portion of the cerebral cortex. This arrangement means that information from the left half of the visual world "out there" feeds into the right hemisphere while the opposite half of the "visual world" projects to the left hemisphere. But the two hemispheres are not isolated from one another. They also communicate through a number of major pathways, of which a massive fiber bundle called the *corpus callosum* is the largest.

What happens when a hungry cat or monkey wearing an eye patch on its right eye is required to learn the difference between two visually presented forms in order to get food while using only its left eye? As you might expect, the animal easily masters the problem with the left eye. What happens if the eye patch is

Cutting the optic chiasm produces two results: it leads, obviously, to blindness in one of the two half-fields of each eye, and it means that each half of the cerebral cortex directly receives visual information from only one eye. If one half of the visual cortex is destroyed after it has been used in a learning task, the animal is still able to use the other half to perform the task correctly.



Cutting the *corpus callosum* as well as the optic chiasm, a much more difficult and sophisticated surgical technique, produces two truly independent visual systems between which there appears to be little if any information transfer.



shifted and the animal is asked to perform with its right eye only? Under normal circumstances, the animal will show practically complete transfer of the learned habit from the trained left eye to the untrained right eye.

But what is the physiological basis of this interocular transfer of training? In order to answer this deceptively simple question, Dr. Sperry and his colleagues were forced to perform a series of highly exacting and difficult experiments. As you will see, the results tell us a great deal about how the brain functions during learning.

The first thing they did was to cut the optic chiasm, deep within the skull at the base of the brain, a delicate operation which produces two related effects. First, it makes the animals blind in both temporal half-fields (the fibers that cross at the chiasm having been severed). Second, the input of each eye is now restricted to a different half of the brain. The visual input from the left eye goes only to the left hemisphere of the brain and the input from the right eye goes only to the right hemisphere.

What happens when an animal prepared in this way is trained to perform a visual discrimination task with its right eye completely covered? Surprisingly, cutting the chiasm in this manner affects neither learning nor interocular transfer. Although the original visual input was restricted to the left eye and the left hemisphere, the trained animal is later able to correctly perform the task with the left eye covered and the visual input restricted solely to the right hemisphere.

Dr. Sperry and his co-workers recognized that this ability to utilize the previously established engram could be accomplished in either of two ways. One possibility is that the original memory trace was laid down only in the left hemisphere during training. During the interocular transfer test the right eye and right hemisphere might gain access to this information through the massive interhemispheric pathway provided by the *corpus callosum*. The other possibility is

that although the input is restricted to the left hemisphere, the information is supplied to the right hemisphere during the *original* training and is consequently available there during the transfer test.

Two further experiments were done to decide between these alternative explanations. In the first experiment an animal with its chiasm sectioned as before was trained with the left eye and then subjected to extensive destruction of the visual receiving area of the left hemisphere. According to the first view (that transfer across the *callosum* occurs only during the transfer test), the animal should fail. According to the second view (that the interhemispheric transfer occurs during original learning), the lesion should be without effect. The latter view was confirmed. Dr. Sperry found that when the left hemisphere lesion was performed following left eye training, the animal showed substantial savings when tested with the right eye. In the second experiment the same procedure was used, except that instead of the cortical lesion the *corpus callosum* connecting the two hemispheres was cut following left eye training. Once again the animals showed good interocular transfer of training.

From these two experiments we may infer that during monocular training in the chiasm-sectioned cat or monkey, a duplicate copy of the memory trace is normally set up in the contralateral hemisphere.

The Role of the Corpus Callosum

Finally, in an elegant series of experiments Dr. Sperry and his colleagues showed that the *corpus callosum* is, indeed, the pathway mediating interocular transfer in the chiasm-sectioned animal. These experiments, which are exceedingly difficult to perform, entail cutting of *both* the chiasm *and* the *corpus callosum before* the original training. After this is done, a monocularly trained animal is capable of learning the discrimination habit but shows no transfer when tested with the opposite eye.

This preparation, called the *split-brain,* apparently produces two truly independent visual systems, one in either hemisphere, with little or no communication between them. To demonstrate this fact, Dr. Sperry has trained split-brain animals concurrently to perform conflicting habits with the two eyes—for example, to choose vertical and avoid horizontal stripes when using the left eye and to do the opposite when using the right eye. Such conflict training is extremely difficult to achieve in the normal animal but is learned with ease by the split-brain cat or monkey.

These remarkable experiments illuminate many facts about the mechanisms involved in the bilateral storage of information in the brain and about the important role played by the *corpus callosum* in the process of interocular transfer. Future applications of this technique can be expected to further clarify the way different brain regions participate in learning and memory.

These results of the surgical approach to the study of brain function in learning and memory appear to provide a basis for qualifying Dr. Lashley's pessimistic view that this approach had but little to offer. But although the surgical method may suggest *which* brain areas are critical for learning and memory, it is incapable of telling us anything about how these areas actually function. To study this important question one must turn to the observation and measurement of brain activity during learning.

It has long been known that the brain displays rather regular patterns of electrical activity. The electroencephalogram recorded from the scalp of a relaxed human subject with his eyes closed has a small and consistent amplitude and a more or less dominant frequency between 9 and 11 cycles per second, and the brain of most animals generates a comparable series of waves. A large number of experiments have been done to show that the brain's electrical activity is subject to modification during learning. Furthermore, the changes produced by appropriately pairing certain kinds of sensory stimuli obey the general rules established for conventional conditioned learned responses. In fact, the electrical "behavior" of the brain can be "trained" by employing procedures comparable to those used to train the animal itself.

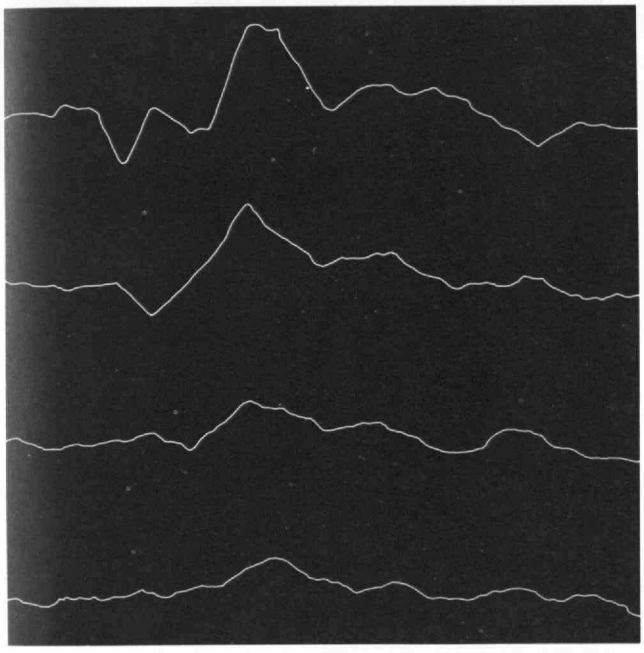
This fact is important because changes in brain electrical activity also occur during the processing of sensory information and initiation of behavioral responses. Can we show how such activity is related to what actually goes on in the brain during learning?

Attempts to answer this question usually take advantage of the fact that the brain, in addition to its regular rhythmical activity, tends to generate brief electrical waves corresponding to the arrival of impulses from various sensory organs. These are the so-called evoked potentials. They may be recorded directly from appropriate brain regions in animals or indirectly from the human scalp in response to lights, clicks, touch, and similar stimuli. Their latency, magnitude, waveform and duration have been examined during learning in animals and man. The results show that the amplitude of the evoked potential increases and its onset latency decreases as the intensity of the stimulus rises.

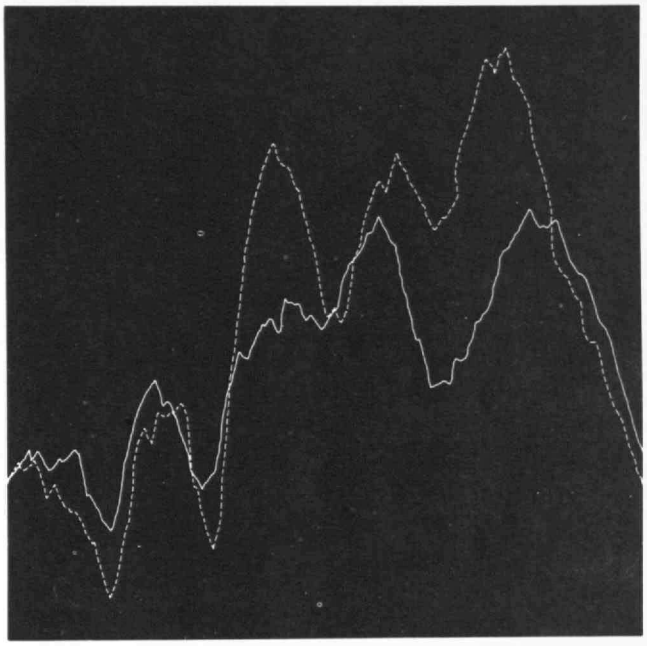
Electrical Brain Activity During Learning

We are now attempting to relate changes in the evoked potential to events in learning. We have adopted a constant stimulus intensity and changed the preceding experiment in such a way as to cause each flash to transilluminate a slide on which are printed three consonants from the alphabet. We use a series of 15 such slides, each one containing a different set of letters. Our subjects (usually M.I.T. undergraduates) are instructed to learn the sequence of slides in the following way: after each slide is presented, the subject must say what letters are to appear on the next one. After saying this he presses a button which changes the slide and automatically produces the next flash. The sequence of slides is presented in this way repeatedly until the

These traces are the averages of the electroencephalographic responses of a single subject to a series of brief light flashes of four different intensities. As the flash intensity increases, the resulting electrical activity increases correspondingly.



These traces are the averages of brain responses to light flashes in a learning situation. Each light flash in this case illuminated a slide with three letters of the alphabet. The subject was required to learn a series of 15 such slides to a point where he could anticipate each one correctly. The solid line shows the averaged response when the subject correctly predicted the next slide in the series, the dotted line the response where he failed. The two are strikingly different after 250 milliseconds following the flash but similar immediately following the flash.



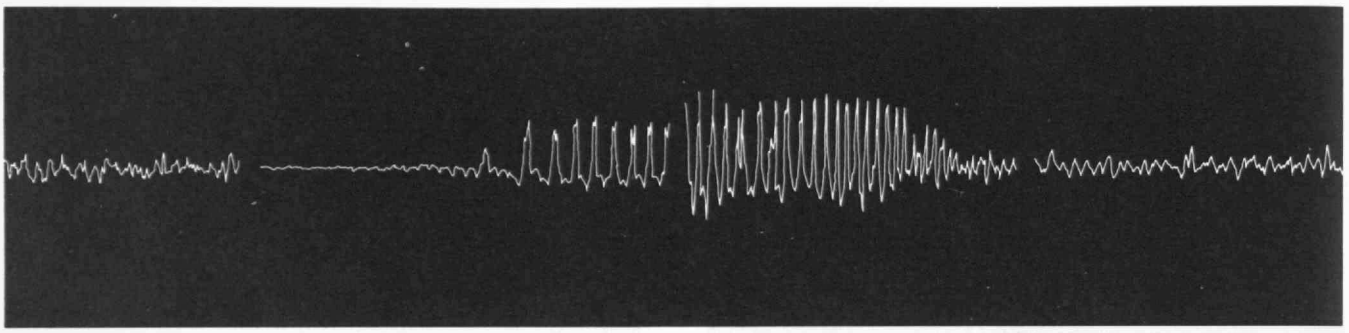
subject goes through two complete series of all 15 slides without making an error. Throughout the session we record the evoked potentials to each flash and simultaneously note whether the subject had predicted the stimulus correctly. Upon conclusion of the experiment we compare the evoked potentials produced by correctly anticipated stimuli and those produced by incorrectly anticipated ones. The result is that the potentials are very similar during the first 250-300 milliseconds but are strikingly different thereafter. Although still somewhat preliminary, these results show quite clearly that with stimulus intensity held constant the evoked potential varies with the behavioral significance of a set of linguistic symbols. We are continuing these experiments in order to further examine changes in the evoked potential during human learning in the hope that we may be able to specify other stimulus aspects to which this electrical response of the brain is sensitive.

This is only one of many experiments, from our laboratory and elsewhere, that show how transient changes in electrical brain activity may reflect brain processes involved in learning and in initiating the memory trace. However, it is almost certain that such transient changes in brain activity cannot themselves provide an adequate basis for maintaining memory over relatively long periods of time. Persistence of the memory trace seems to demand a more permanent structural basis.

Brain Stimulation and Memory

Evidence for this view derives from the fact that we can drastically modify or even abolish normal electrical brain activity for rather long periods of time without markedly affecting the retention of well-established habits. To illustrate this fact, consider another experiment from our laboratory. We begin the experiment by training rats to perform a particular response, such as finding their way from the starting point to the goal box in a maze. A hungry rat may take quite a while to

A brief, intense electrical shock to the head causes convulsions and brief unconsciousness in the rat. What is the effect of the shock on memory? These electroencephalographic traces show normal brain activity before the shock, the ensuing convulsion, the following period of unconsciousness, and the return to normalcy (each segment is interrupted to reduce the total length of the trace). If the shock comes within 10 seconds of an animal's learning, the shock obliterates the memory of what had been learned. With delays of 30 seconds or more, the treatment is without effect.



learn the correct path, but after several trials it will rapidly and errorlessly run to the food every time. In fact, a well-trained rat needs only a single, brief exposure to a completely new maze problem in order to learn the pathway to the goal. In our experiment we give such a rat a single trial on a problem he has never encountered before. About a minute after the learning trial, we connect electrodes from the animal's head to a recording instrument that displays the electrical activity of the brain. After observing the normal brain rhythms, we apply a brief electrical stimulus to the brain. This induces a painless convulsion followed by unconsciousness. We record the way in which the pattern of electrical activity changes as a result of the electrical current passing through the brain. A typical tracing shows that normal electrical activity is interrupted by a period of intense seizure activity which, in turn gives way to a rather prolonged period of electrical silence. Within about five minutes the pattern of electrical activity returns to normal as the animal recovers from the effects of the treatment. Note that during this time we have, first, increased the frequency and amplitude and the electrical activity of the brain and, second, virtually abolished it. What effect does this have on memory?

To answer this question we may, after an appropriate interval, replace the rat in the starting box of the maze and ask whether the drastic modification and virtual cessation of normal brain activity has interfered with the animal's ability to remember the correct path to the goal box. We find that it has not. The rat performs without error. Experiments of this type, supported by many others, lead us to conclude that the persistence of memory does not depend upon the uninterrupted maintenance of normal electrical brain activity.

The Time Constants of Memory

To summarize, while our evoked potential experiments show that electrical brain activity plays a role in learning, our brain stimulation experiments show that at least one minute after learning is completed, interference with such activity does not disturb memory. Taken together, these two results suggest that electrical events in the brain may be responsible for memory trace initiation but not for memory storage. The neuroelectrical phase of memory trace formation thus appears to be time-dependent.

What are the time constants of the process? In order to answer this question, we have conducted a series of experiments in which electrical brain activity has been interrupted in the way I have described at various time intervals after rats were exposed to a variety of learning situations. We obtained very strong evidence to show that an interference with electrical brain activity within 10 seconds after learning produced a lasting impairment in the animals' ability to remember the task. Within the 10-second interval the degree of impairment was inversely related to the delay of the treatment. At very short intervals the animals showed almost complete amnesia for the learning. At delays of 30 seconds and longer the treatment was without effect. Our results, which have been subsequently confirmed and extended by us and others, strongly suggest that uninterrupted neuroelectrical activity is necessary for at least 10 seconds after a learning trial in order to produce unimpaired memory for the learning, and that longer-delayed interference does not affect retention.

We conclude from our experiments that while neuroelectrical events are critical for initiating the memory trace, some other mechanism must be responsible for permanent memory storage.

It is still impossible for us to specify the changes produced in the brain by the transient neuroelectrical events that initiate memory storage. There are, how-

ever, a number of recent findings, some of which are still highly controversial, that implicate qualitative and/or quantitative changes in the ribonucleic acids (RNAs), proteins, or other chemical constituents of brain cells as the basis of long-term memory.

The data are too fragmentary to warrant an extensive discussion, but a few points are worth mentioning.

Brain Chemicals, Learning, and Memory

A number of recent studies suggest that when an antibiotic drug called puromycin is injected directly into the brain in mice, rats, and goldfish, the animals are capable of learning but are unable to retain the effects of the training. Since this compound exerts a potent inhibitory effect upon protein synthesis, it is tempting to conclude that protein synthesis is necessary for long-term memory. Unfortunately, the situation is not so simple. It turns out that injections of an even more potent protein inhibitor—cyclohexamide—are without effect in such situations.

Perhaps the most startling (and certainly the most widely publicized) claim concerning the purported role of brain chemicals in memory is that learning can be transferred from a trained rat to an untrained one by injecting brain RNA from the trained animal into the abdominal cavity of the untrained one.

Unfortunately, there is now considerable question about the validity of these earlier claims. Together with investigators from more than a half dozen laboratories who independently set out to confirm the transfer of training by injection, we have failed to reproduce the reported results. Already there appear to have been more than 30 independent failures of this sort. The claimed transfer of training via injection thus remains an elusive phenomenon. Further work will be needed to explain why this is so.

These and other attempts to show that certain complex brain chemicals (nucleic acids and proteins) are involved in the process of memory storage have been inspired by the fact that such molecules are capable of carrying large quantities of coded information and are involved in the biological mechanism of hereditary transmission. The hypothesis is further bolstered by the argument that a permanent change in cellular excitability must underlie experiential memory and that this must entail a change in the genetic composition of the cell. Furthermore, since most other cell constituents have a rather high rate of turnover, the relatively stable nucleic acid molecules become attractive candidates.

It is important, however, that we do not overlook other possible ways in which the contents of a cell may be modified, thereby leading to a change in its excitability, without modifying its genetic apparatus. It seems entirely possible that while changes in nucleic acid or protein content of brain cells may occur, they need have nothing directly to do with learning. Since nucleic acids are involved in protein synthesis, it may be that changes in nucleic acid content of active cells may reflect the increased protein turnover occurring simply as a consequence of increased impulse transmission. Since a decrease of cytoplasmic nucleic acid concentration has been reported in the retinal cells of animals reared in the dark, it seems likely that nucleic acid levels, like those of other metabolic constituents, may reflect the level of functional activity of the cell without being the actual repository of specific coded information relevant to learning.

Perhaps the picture that emerges from the studies I have reviewed is not an orderly one. I warned at the outset that this would be the case. Nevertheless, it seems possible to list at least four general conclusions based on the preceding discussion.

- There is evidence that transient neuroelectrical changes occurring in the brain in response to sensory stimuli are correlated with the learning function and may play a role in memory trace initiation during a period of several seconds at least.
- It is highly unlikely that this neuroelectrical activity is responsible for the long-term storage of the memory trace. Such storage demands a more enduring and stable basis.
- It is unlikely that the structural basis of memory comprises a single connection or a change at just one place within the brain.
- Although nucleic acids and proteins may play a role in learning, recent suggestions that they do so in a manner comparable to their role in genetic information transfer remain largely unsubstantiated.

We are still far from understanding the way the brain works when we learn or remember. We are still largely in the dark concerning the details of memory trace initiation, storage and retrieval. We have been unable to point to a specific region or volume of brain tissue that, like the memory core of an electronic computer, can be said to be the repository of stored information.

Yet we have learned a great deal and are always learning more about neural organization. It now seems likely that we may soon be able to specify the locus and the nature of the brain process that has so long eluded us. Taking this result and findings obtained in studies of other aspects of brain function, we may someday be able to apply our knowledge of the biology of memory to practical problems of human learning and education.

Stephan L. Chorover, Associate Professor of Psychology at M.I.T., studied at the City College of New York and New York University, and held positions at the Albert Einstein College of Medicine (Yeshiva University) and Bellevue Medical Center (New York University) before coming to M.I.T. in 1961. He holds the Founder's Day Award of New York University (1960) for distinguished scholarship.

The Moral Responsibility of Education

Our goal is to achieve a world open between disciplines, between reason and faith, intelligence and sensibility

By Samuel H. Miller, '21

"And I saw a new heaven and a new earth: for the first heaven and the first earth were passed away;"
Revelation 21:1

In this brilliant image in Revelation 21:1, the Biblical writer succinctly summarizes in a phrase or two the most significant and far-reaching crisis of his epoch. The old heaven and the old earth were nothing less than the system of Greek philosophy and the order of Roman government which had sustained the world for centuries. Their strength had ebbed, and men were face to face with radical changes in every activity of life. Fortunately for the Biblical writer, though the old heaven and the old earth were gone, he was in possession of a new heaven—the Christian faith, and a new earth—the institution of the church. Actually, these were to sustain the world of men for a thousand years.

For us it can also be said, the old heaven and the old earth have gone. The philosophies of the past no longer motivate us or elicit a sense of reality from us; and every institution in civilization has already undergone a sea change of revolutionary dimensions. There is no need for me to belabor the point that a whole world which our fathers knew has disappeared, and will not return. Our state of anguish and anxiety is that having seen the old go, we are not sure how to organize the fantastic manifestations of the new world—its power, its speed, its vastness and diversity, its mobility and its novelty. Although they are all around us, although we live on them, we still do not yet know what they mean, or what effect they will ultimately have on us.

In Joseph Conrad's story, *Heart of Darkness,* there is an unforgettable scene when the river steamer is held up for repairs and Marlow is driven to desperation in his effort to find the necessary materials to do the job. Africa with its teeming, murky life, its frenzied, howling natives dancing on the banks, and then by contrast its mysterious stillness and languor, rises up to tempt and taunt the captain. Technical efficiency, the world of Europe, is stranded at the very edge of the jungle, the primitive darkness. With a deliberate stubbornness of will, Marlow busies himself at the repairs, as he says, because "in that way only it seemed. . . . I could keep my hold on the redeeming facts of life." But what Marlow needed most was rivets.

"What I really wanted," he said, "was rivets, by Heaven! Rivets." To get on with the work—to stop the hole. Rivets I wanted. There were cases of them down at the coast—cases—piled up—burst—split! You kicked a loose rivet at every second step in that station yard on the hillside. Rivets had rolled into the grove of death. You could fill your pockets with rivets for the trouble of stooping down—and there wasn't one rivet to be found where it was wanted. *We had plates that would do, but nothing to fasten them with.*

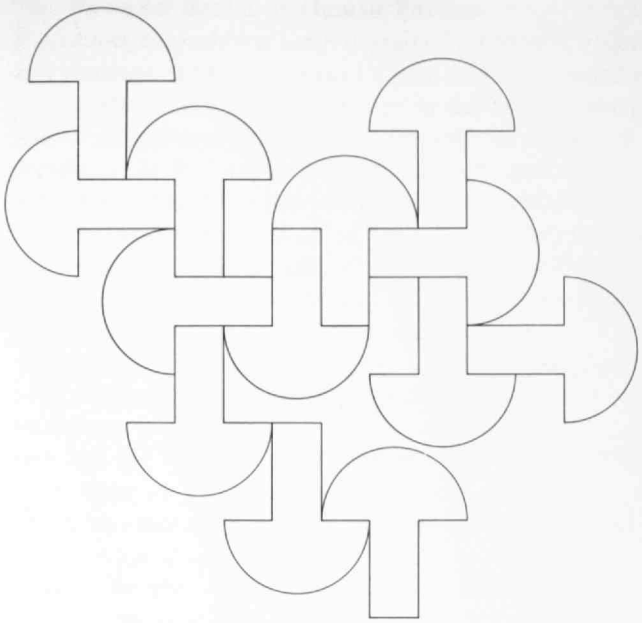
The gist of this remark is that neither Marlow nor Kurtz were able to hold things together, a condition which Yeats had described as all coherence gone—the center no longer holds—things fall apart—the ritual of innocence is lost. Marlow by heavy-handed, feverish restraint can turn his back on the primitive by tinkering with technology, while Kurtz, whose mind flashes out in vast visions of an ultimate utopia, falls prey to the "horror" near at hand. Rivets—something to hold the world together—are what we all need. What frustrates us is the knowledge that there are, or were, rivets elsewhere. Other ages, other cultures—other people—who knew some secret we have lost, by which they saw life steadily and saw it whole, these we cannot forget, though we may be tempted to deny.

How can this vastly elaborated, frighteningly expanding crystal palace of technology, motivated by the pure chrome steel motives of science, be firmly attached to the human world—that gross, wayward, perverse, erratic world of flesh and dreams, dust and destiny, will and whim? What rivets shall be required to bind together the plates of man and society, of flesh and the machine; of the heart's darkness and reason's cold, blundering light; of faith and fact; of poetry and planning; of freedom and order; of things and the spirit? Or will we be stranded with our high-priced technical wonders at the edge of the jungle, tempted, tormented, taunted by dreams we cannot satisfy and a height and depth we dare not admit while we tinker at the small repairs, for want of rivets—rivets to hold the world together, meaningfully, magnificently? What impasse will we reach by the horizontal elaboration of a vast web of shining technological devices for transportation and communication, if this electronic civilization has no deep foundations in the human order?

Let us put the matter metaphorically. Where does education need rivets?

Mass Consumption of Ideas

I should like to suggest that one of the grave tendencies in present education is the reduction of the college to a warehouse of ideas—ideas of every sort and kind, stored neatly in thousands of carefully labelled bins, departmentalized, jargonized, sorted and re-sorted by



meticulous research, always available for new combinations or even descriptions, unnumbered, catalogued, classified, programmed, and well cleansed as usable data on any research assembly line. Indeed, one of the destructive accomplishments of the culture in which we live is its marked ideological character.

That is to say, it is strikingly ideological in contrast to previous epochs by reason of the primal importance we give to ideas. They are our very life and substance. We do not know how to approach anything directly. We have to have an idea of it, and through the idea we handle it, so to speak. We have a lust for ideas. They are as ubiquitous and often as fantastic and as far removed from reality as the lush, lunatic symbolism of the Middle Ages. Because there is little contact with the restraints of reality, they grow like parasites, air-borne, hanging in the air. The generic name for this kind of thing, I suppose, is sophistication. The best description of it is in de Tocqueville's observations of American democracy, where he says that we "are constantly finding it necessary to rely upon ideas [we] have not had time to explore thoroughly; men are led to attach an excessive value to the rapid bursts and superficial conceptions of the intellect, and, on the other hand, to undervalue unduly its slower and deeper labors."

There are several consequences of this mass consumption of ideas. Beyond the fact that there is an assumption that many ideas make a wise man and the profligacy of public opinions is taken to mean some kind of private conviction, both false of course, there is a kind of tumbleweed instability about it. Ideas need to be riveted to something; otherwise they float off in any direction at the slightest gust of wind to rationalize the most outrageous passions, public or private. In a recent discussion, former President Millicent McIntosh of Barnard College is reported to have said that it was Germany, with its fill of graduate students, which encouraged them "to move rapidly and directly into areas of specialized knowledge; but if those German students had had the opportunity in which they might reflect upon their knowledge, upon the world, upon themselves, and upon their human responsibilities, then perhaps the recent history of our world might have been very different."

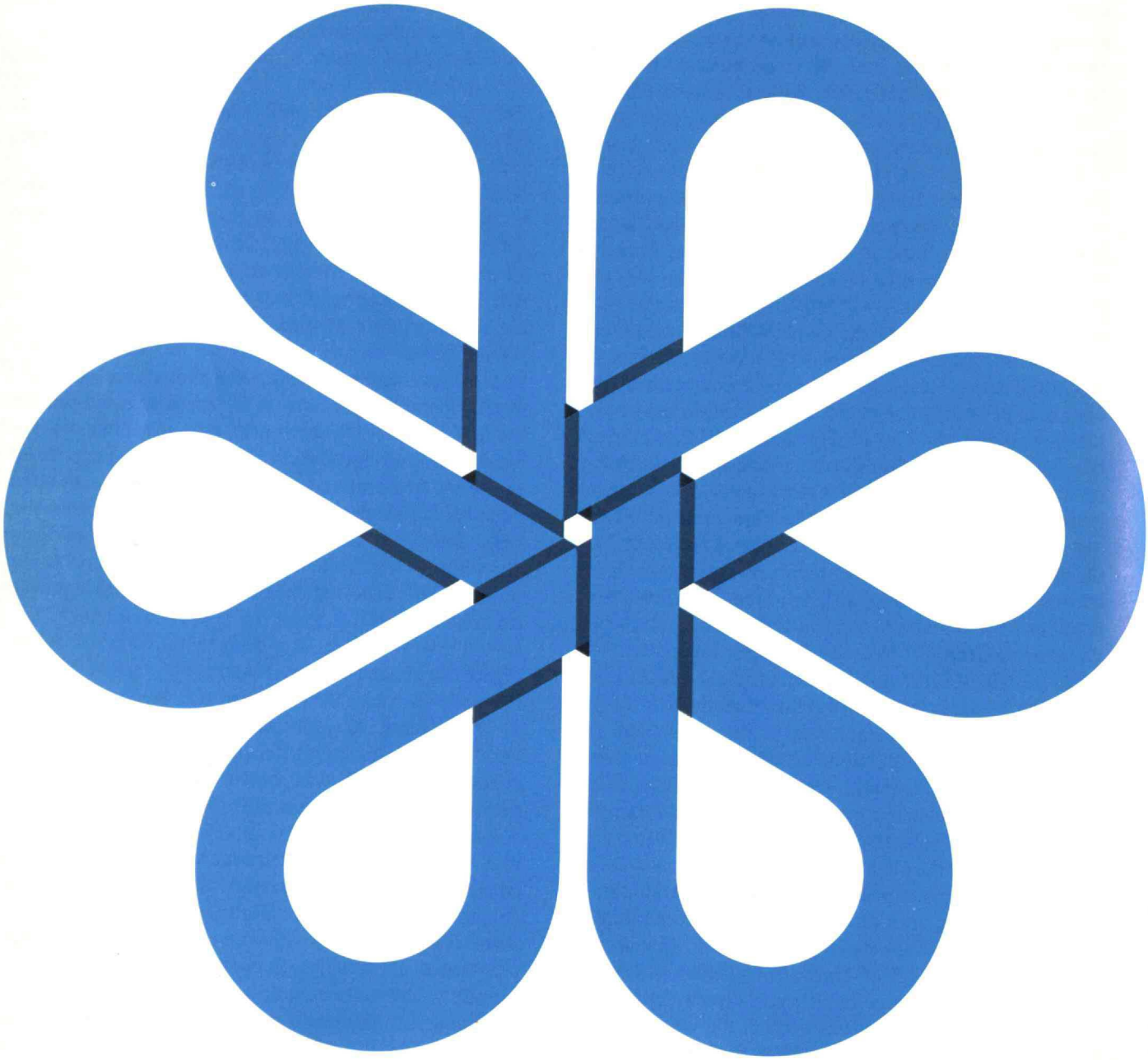
One must ultimately ask whether reality dwells in the head or in the whole man, and if in the whole man, then education must reckon with larger dimensions if it is to prove responsible.

It may be precisely this lack of depth which will provide a key for leading us beyond the sorry state of shoring up the ruins with the pitiful fragments of our exploded world.

There are three aspects of the same direction which would open the question up at another level. Perhaps the first of these is the simplest and most obvious—our inability to pull our world together meaningfully. There are rivets in one place and a battered ship a hundred miles away; there are all kinds of unitary principles, here, there, and elsewhere, political and scientific, but the schisms which rend our world are too deep and broad to be pulled together by abstract formulas or superficial slogans.

Pigeon Holes and Compartments

Certainly the most obvious need for rivets, so to speak, in the educational process is at the point where the very freedom of inquiry becomes chaos and works against itself in the final outcome of producing a wise person. Instead, there comes forth a man with a honeycombed, pigeon-holed brain, with a set of rigid terms and facts stuck here and there according to the course labels in which he discovered them. There is neither common ground nor continuity nor coherence among them. Each section has its own authorities and its own sacrosanct vocabulary. Every precaution is taken to prevent a leak, either methodologically or substantively, from one compartment to another. Each department has its own basic kerygma, which must not be confused



with another.

Or turn to Robin G. Collingwood's analysis of the split-up of the psyche of man at the end of the Middle Ages. The destructive energies which had been held in the thrall of medieval unity broke asunder, so that the aesthetic sense was no longer dominated by religious themes; the political sense likewise threw off religious constraints; the discursive reason developed science and repudiated any authority but truth considered objectively. This development within man was quickly manifested in the exterior world by autonomous vocations and self-conscious activities in the realm of art, government, and science. Each sphere stood in rebellion against the traditions that had bound all together in a religious unity. Church and state were now carefully set apart; the artist and the saint went their separate ways, developing a high degree of suspicion of each other; and the scientist and the ecclesiastic began a long battle of endless controversies.

After three or four centuries of such a development, both within man's consciousness and in his cultural activity, we now stand at a point where we are unable to identify for the most part the religious factors in the political sphere of government; nor are we able to express our religious experience in the aesthetic mode of visual symbols or myths; nor do we know how to recover the religious implications of a scientifically objectified nature. We are split, schizophrenically divided, holding within ourselves and our world several competing, perhaps contradictory, exclusively inclined fragments, each boisterously claiming to be the whole, or at least the highest.

What we have now, both within ourselves and outside in the world, is a riot of specialized segments of experience literally unable to understand the others, suspicious and arrogant, each trying to prove itself superior and woefully bereft of the sustaining assistance of the whole of life. The religious is serious enough, but lacks art for the expression and communication of its meaning; art is in a perfect tumult because it is separated from religion and lacks depth; politics, always concerned with social order, failing to find assistance in depth from religion or in breadth from art, tends to be coercive and fanatical, drifting easily into one form or another of tyranny in its effort to make order and unity where there is none. Morally lacking the seriousness of depth and the comprehensiveness of breadth, we all become impoverished and lack the strength to create community, and in one failure desperately struggle to organize by technical means the cast collectivities of cities as a compensation.

I am not pleading for medieval unity, or for an external and artificial imposition of unity, or even for a kind of impossible utopian homogeneity. Far from it! We cannot use the framework of ancient Greece or the medieval vision of Dante, however great they were. It is our inescapable responsibility to achieve our own vision at a time when it seems almost impossible to stretch our imagination far enough to embrace such extremes and disparate points of view.

The Powerful Realm of Human Passion

If teachers can achieve some degree of a synoptic vision and students can be led toward a goal and not toward a degree, then there is still a chance in this most diversified of all cultures that we may be able to recover direction so as to have a purpose, and glimpse at least some kind of unity so as to have meaning. Without this, all the king's horses and all of Teller's atom bombs, all the economic wealth and engineering know-how of Americans will not keep us and our world from falling into pieces. We need rivets—large ones and strong.

Let us turn again to the level at which man holds such ideas as education may furnish. Where can we find rivets to bind together the loose pieces of information and the basic design of a man's life? How can we bind ideas to profound feelings? Only when we can reach into that dark but powerful realm of human passion that lies mysteriously out of reach of reason will we manage to give weight and gravity to our ideas. Only then do they achieve third-dimensional substantiality. Eric Heller, in *The Hazard of Modern Poetry,* has remarked:

The workshops in which our truths are manufactured are surrounded by swarms of unemployed affections. Unemployment leads to riots, and riots there were and are. The most powerful among them in recent history of thought was romanticism.

But the rub comes when we ask how education may train the feelings, discipline the sensibilities, and root ideas in the firm ground of conviction. Plainly, one of the flaws which allows the prolific and irresponsible generation of ideas is that one idea may be engendered from another without reference to reality. This arbitrary chess game may go on endlessly, producing a world of ghostly abstractions, quite impotent and thoroughly deceptive, inhabited by haughty and condescending pedants.

One remembers St. Augustine, as he is described by Syril C. Martindale, S.F., in "A Sketch of the Life and Character of St. Augustine": "Augustine could hold no mere frozen idea before his mind—the thing palpitated forthwith and came to life and he hated it or loved it. If there was intellect in his mysticism, there was passion in his philosophy."

Sigfried Giedion has put the matter succinctly: "Thinking is trained; feeling is left untrained. . . .

(*Continued on page 47*)

Samuel H. Miller, '21, is John Lord O'Brian Professor of Divinity and Dean of the Divinity School at Harvard University. His theological degree is from Colgate University (1923), and he served in several Baptist churches before a teaching appointment to the Andover-Newton Theological School in 1951. He is a member of the Editorial Board of the *Journal of Pastoral Care,* and he is a national leader in the parish ministry.

The Trend of Affairs

Seismic Arrays as Nuclear Detectors

New techniques for observing earth movements, based largely upon great arrays of seismometers, now assure that the vast majority of earth movements originating in underground nuclear explosions can be correctly identified as such.

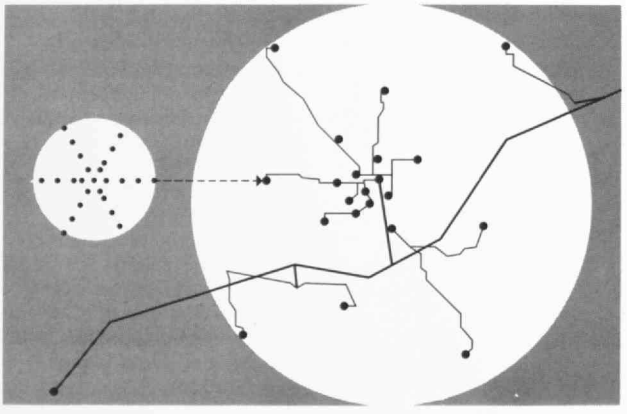
This is the conclusion of Sir Edward Bullard, Professor of Geophysics at the University of Cambridge and a member of the Royal Society, writing in a midsummer issue of *Scientific American*. Of a worldwide sample of 161 earthquakes, he says, only seven (or 4½ per cent) could not be distinguished from explosions by modern techniques of recording and analysis. Whether nuclear test ban discussions can be modified as a result of these findings remains to be seen.

In general, shock waves of an earthquake are the result of a one-directional movement in the earth, rocks slipping along a fault line. By contrast, shock waves from a nuclear explosion travel outward in all directions from a single, sudden point of origin. Seismometer records of an explosion show a sharp peak of movement, while earthquake shock waves are likely to be spread over a longer period of time. The greater precision of seismic arrays means that these details are now clearly enough seen, even in the case of small and distant events, so the cause can almost always be identified.

A seismic array is an interconnected group of individual seismographs, spread widely over the surface of the earth. Records from the individual instruments of the array are transmitted continuously to a central point where they are analyzed and compared to show the direction, speed, and character of whatever earth movements may be detected.

LASA, the world's largest seismic array located in eastern Montana, was designed at M.I.T. Lincoln Laboratory with collaboration of the Advanced Research Projects Agency and U.S. Air Force. LASA consists of 525 seismometers arranged in 21 subarrays, covering an area of 10,000 square miles with a diameter of 125 miles. Its headquarters and central computer are in Billings.

Twenty-one clusters of 25 seismometers each comprise LASA, the large-aperture seismic array built by Lincoln Laboratory near Miles City, Mont.; all are interconnected through open wire and microwave links with a central computer in Billings. The world's largest array, LASA covers an area 125 miles in diameter, a total of 10,000 square miles.



To the task of designing, operating and evaluating a seismic system of such unprecedented size and complexity, Lincoln Laboratory brought relevant experience from such diverse fields as large antennas, data transmission networks, and digital data processing, a combination which has yielded important successes in radio communications, radar, and radio astronomy. The techniques of analyzing and interpreting seismometer array records are not unlike these and other computer correlation techniques.

Busy Neighbor

M.I.T.'s newest Cambridge neighbor is coming of age.

The Electronics Research Center of NASA broke ground on November 10 for the first units of a $60 million "campus" complex on 26 acres of land immediately north of Kendall Square. The first construction phase, on which foundation work is now under way, will be a 26-story tower building, three-story Microwave Radiation Laboratory, and three-story auditorium-cafeteria.

Meanwhile, in its temporary quarters in Technology Square, the Electronics Research Center is already moving steadily toward its staff build-up to 2,100 scientists, technicians and administrative personnel and a research program of $50 million annually. Of this amount, 70 to 80 per cent will go to private industry.

Since October 1, James C. Elms, formerly NASA's Deputy Associate Administrator for Manned Space Flight, has been director of the Center. Among other recent appointments is that of David Van Meter, '42, named Chief of the Computer Research Laboratory. The first research contracting activity, completed during the summer, involved 33 contracts worth a total of about $2.5 million. A second group of proposal invitations have now been issued, and some are already under contract. E.R.C. research activities include gas-bearing gyros; strapped-down guidance systems; guidance theory and trajectory analysis; spacecraft display and control; information theory analysis, planetary atmosphere, space-capsule contaminant and high-temperature sensors; plasma conditions critical to communications; and laser communications.

Technology for Sensory Aids

Will the blind one day have machines that read aloud from books, magazines, newspapers and other printed material?

Can computers enable an ordinary typist to turn printed material—say, a textbook for a blind child—into braille quickly?

How about a folding cane the blind can tuck in a pocket when not in use, but when extended, will be rigid enough to yield the same quality of tactile and kinesthetic information available from non-folding canes? These are among the questions which research workers in many groups throughout the United States and Canada are seeking to answer through a diverse and growing technical interest in sensory aids for the blind.

Among principal research centers are the American Printing House for the Blind in Louisville, Ky., the University of Louisville, San Diego State University and Stanford University in California, M.I.T., the American Foundation for the Blind in New York City, International Business Machines, Inc., Mauch Laboratories in Dayton, Ohio, the Haskins Laboratories in New York

City, Bionic Instruments, Inc., in Bala Cynwyd, Pa., and volunteer engineers scattered through the Bell Telephone System who make up an organization they call "Bell System Pioneers." In Canada, the National Research Council already has made important steps in developing sensory aids for the blind.

Events at M.I.T. over the past six or seven years are a microcosm of this national program to bring technology —including some developments in defense and space research—to bear on problems of aids for blind or otherwise handicapped persons.

At M.I.T. research on sensory aids for the blind has centered in three principal groups—electrical engineers in the Research Laboratory of Electronics, mechanical engineers in the Design Division of the Department of Mechanical Engineering, and in the new Center for Sensory Aids Evaluation and Development. The Center itself has a steering committee of people not only from M.I.T. but also from the Perkins School for the Blind, Tufts University, Brandeis University, the Massachusetts Division for the Blind and the American Center for Research in Blindness and Rehabilitation.

M.I.T.'s earliest work in the field dates back to 1949 when Professors Jerome Wiesner, now M.I.T. Provost, and the late Norbert Wiener, together with a group of students, carried out investigations on how the deaf-blind might be given access to spoken words. Although the emphasis was on theoretical work as part of the group's over-all interest in communications science and information theory, some hardware was built and evaluated at the Perkins School for the Blind, Watertown, Mass.

In 1952, another group under the late Dr. Clifford Witcher experimented with a photo cell-type mobility aid that would help the blind detect objects and terrain changes. Dr. Witcher himself was blind.

In the late 1950's, John K. Dupress, a worker trained in both electrical engineering and psychology who was then working with the American Foundation for the Blind (and himself blinded in World War II), began paying informal visits to M.I.T. to discuss how technology might be applied to helping the blind.

One of the early results was work in the Research Laboratory of Electronics on reading machines—an interest that grows out of R.L.E.'s experience with pattern recognition by machines. Another was research in the mechanical engineering Design Division on increasing the availability of braille through computers and high-speed braille embossers and in mobility research and devices such as hand-held guidance aids and collapsible canes.

Dupress himself joined M.I.T. in 1961 and became managing director of the Center for Sensory Aids Evaluation and Development when it was established in 1964 under a grant of the Vocational Rehabilitation Administration. The Center's primary purpose is to evaluate devices invented anywhere using a corps of blind persons as evaluators. Further, the Center staff refines those devices that show promise, engineers them to production readiness, and turns them over to industry for manufacture and distribution. Folding canes, braille embosser prototypes, and mobility aids are some examples now under evaluation.

So far, one of the most promising devices to come out of M.I.T.'s own research is the Mechanical Engineering Department's high-speed braille embosser. Its history illustrates how sensory aids projects are used to involve students in real-world research and development.

Most braille printing is done by hand-operated mechanical machines that require operators who know braille code and specialized braille contraction rules. Dwight M. B. Baumann, '57, Associate Professor of Mechanical Engineering, gave an undergraduate class the assignment of coming up with something better. From this beginning have flowed literally dozens of bachelor's, master's and even doctoral theses research projects and, most importantly, an electromechanical device that puts out Grade II braille at 16 cells per second.

Using computer translation programs first developed at IBM and later refined at M.I.T., the group then was able to use a teletypewriter as the input to the M.I.T. Computation Center's own time-shared IBM 7094 computer which translated to braille output signals to drive the high-speed embosser. Still a further refinemnt was the use of teletypesetter tape (sometimes called compositors' tape) as the input to the computer.

Meanwhile, one blind worker, Edward L. Glaser, Associate Professor of Electrical Engineering who directs the writing of advanced time-sharing programs at Project MAC, has used the high-speed braille embossing equipment and braille translation programs contained in a small satellite computer to communicate with the central time-shared MAC computer by braille written speeds equal to the fastest office electric typewriters instead of by the ordinary teletypewriter output which he cannot see.

"At last," says Professor Glaser, "I can communicate directly with machines I have been designing in my mind for others for years."

The goal is to make virtually all published material available to the blind in braille. With central time-shared computers reached via telephone lines, for example, schools where blind children are integrated into classes with sighted children might be equipped with electric typewriters and high-speed braille embossers. When reading materials (textbooks, tests, etc.) are needed for the blind child, a typist might dial the central computer, type in the material and soon have it back in braille.

Miss Mary E. Switzer, Commissioner of the U.S. Vocational Rehabilitation Administration, watches while Edward L. Glaser, Associate Professor of Electrical Engineering, demonstrates high-speed braille embossing equipment and specialized computer programs that enable him to communicate in braille with Project MAC's time-shared computer.

The Museo de Arte de Ponce is the gift of Luis A. Ferré, '24, "to the people of Puerto Rico and the visitors who come from all over the world." The building, designed by Edward Durell Stone, '27, houses a relatively small but distinguished collection of art which ranges from European and mid-eastern primitives and Renaissance paintings through works of modern Puerto Rican artists. A graceful double staircase leads from the lobby to hexagonal galleries on the upper floor, and the white concrete façade also shields a gardened courtyard.

The Trend of Affairs

All this, of course, is in the future. Sensory aids research planning at M.I.T. includes the conversion of publishers' tapes to speech and computer time-compression of this speech for faster comprehension. There are still many technical hurdles to be overcome, not the least of these the large time-shared central computer which is the task of Project MAC and the embosser which is the task of both the mechanical engineers and the sensory aids center where a few prototypes are under evaluation.

As for reading machines, the work of Professor Samuel J. Mason, '47, and his group has resulted in an experimental model of a system that will recognize actual bookprint and spell out letters audibly from time-compressed voice recordings of the alphabet and numbers. One goal is a machine that will read words, not letters, generating artificial speech from the recognized characters, so the blind might one day "read by hearing" at speeds considerably greater than are now possible.

In all, sensory aids research at M.I.T. has resulted in 94 student theses, 55 reports and publications, 35 professional paper presentations and seven major conferences. The research activities are supported by grants from the Vocational Rehabilitation Administration and such other agencies as the National Institutes of Health. Most recently, special education teachers attending a summer course at Teacher's College, Columbia University, took part in a week-long seminar at M.I.T. where workers from many centers summarized the present state of sensory aids development. Already it is clear that Dr. Glaser's work with computers and computer programming is opening up new and prestigious job opportunities for the blind.

A Partnership in Art

A unique partnership of architect and philanthropist has given Puerto Rico its first important public art museum. Both members of the partnership are M.I.T. Alumni.

The Museo de Arte de Ponce now occupies an elegant building designed by Edward Durell Stone, '27, in Ponce, Puerto Rico. It houses a 400-work art collection valued at more than $3 million. The donor of this gift to the "people of Puerto Rico and the visitors who come from all over the world" is the Luis A. Ferré Foundation, whose founder was graduated from M.I.T. in 1924 and has become one of Puerto Rico's leading industrialists and a prominent political figure.

Mr. Ferré has been gathering paintings of the European and American schools of the past five centuries for only a little more than 10 years. His collection formally opened as a museum in 1959, housed in a mansion in the center of Ponce. A year ago it moved to its new $2 million permanent home.

Seven sky-lighted interior galleries, hexagonal in shape, set off a collection of masterpieces ranging from primitives and Renaissance artists of the Italian, Flemish, German, Spanish, French, and English schools to Nineteenth Century and contemporary works. A generous gift from the Samuel H. Kress Foundation has made possible the most recent additions of paintings by Murillo, Ribera, and unidentified artists of the Florentine

and Sienese schools of the Fourteenth Century. Contemporary art is represented almost exclusively by paintings by Puerto Rican artists.

The Ferré collection is pointedly educational, representing an effort at over-all excellence rather than a preference for "name" painters. "I have felt," Mr. Ferré has said, "that it was important to have works of art of fine quality, even though they were by minor masters, especially so if these were the only ones available of particular schools or periods."

Mr. Ferré describes his purpose as "to bring a representative selection of fine examples of occidental art to Puerto Rico and to make it an island offshoot of the great cultural tradition of the West. As a distant island," he said, "Puerto Rico is far removed from the cultural trends which continued to inspire artistic creativity elsewhere; the island needed authentic examples of Western art to be enjoyed and to stimulate its own creative talents."

The concrete building which Mr. Stone designed to house the Ferré collection has been called "the most remarkable and beautiful piece of architecture in Puerto Rico today." The exterior walls are whitish and shimmering, covered with troweled marble, applied like stucco.

Inside, the entrance leads to a hall accentuated by rounded stairways giving access to the principal galleries on the second floor. These are shaped so that a visitor can stand in the middle of the room and scan the pictures on all sides, a "fine arts version of Cinerama," the New York *Times* said. Gallery walls are covered with heavy cloth of several colors and styles, attached only at the top and bottom, and the ceiling is recessed into triangular skylights arranged to repeat the hexagon.

The first floor is reserved for offices, workrooms, library, small amphitheater, and two smaller galleries for travelling exhibitions. Outside there is a walled garden and open-air theater.

For Individual Growth

A special study panel of Engineers Joint Council says that "a total reassessment of engineering education" is now needed if the engineering profession is "to provide wise and creative leadership in putting science and technology to work in human fulfillment."

The engineer now has special understanding of the contributions of science and of their effective use in industry and government. He must therefore be prepared to assure that technological change will result in "the improvement of the human condition throughout the world," according to the panel report.

The panel of nine engineers included H. Guyford Stever, President of the Carnegie Institute of Technology who was formerly head of M.I.T.'s Department of Mechanical Engineering. Its report, with recommendations on ten topics relevant to engineering education, includes these suggestions:

- The prospect is for future complexity in technology which may well become unbearable unless the nation's engineering manpower can have new understanding and skill.
- Institutions should be "innovative, flexible, and daring" in committing their resources, but we should encourage the development of different programs in different institutions according to their own capabilities and needs.
- What counts is not what the student knows so much "as his tone of attack, his precision of mind, and his creative powers in resolving accumulated knowledge."
- The conventional separation of education in engineering from that in the liberal arts "contradicts the essential truth that the growth of the individual, and not precise content, should be the focus of all education."

A Test Born of Technological Change

"The crucial test of our entire free society," Julius A. Stratton, '23, told the M.I.T. Corporation in his last report as President of the Institute, "lies in the potential of all our institutions—public and private—to make radical adjustments to technological change, while maintaining clarity of function and purpose.

"The real crisis of the university in our time," wrote Dr. Stratton, "is how to maintain its intellectual integrity, how to hold fast to the essence of its ideals, while striving to interpret and express them in the context of new science, of new economics, of new politics—in sum, of a totally new world."

Wanted: Ideas and Values

What is the nature of the challenge to today's university? These, said Dr. Stratton, are typical of the ques-

"The real crisis of the university in our time is how to maintain its intellectual integrity, how to hold fast to the essence of its ideals, while striving to interpret and express them in the context . . . of a totally new world."
—Julius A. Stratton, '23.

PHOTO: MARTHA HOLMES

A new communications network gives police the jump on fast-moving fugitives

It takes a suspect 85 hours to drive, and nearly six to fly, from New York to Los Angeles. California is ready and waiting for him just four minutes after he starts.

Reason? A fully automatic teletypewriter network just completed by the Bell System to provide better communications for law enforcement agencies from coast to coast.

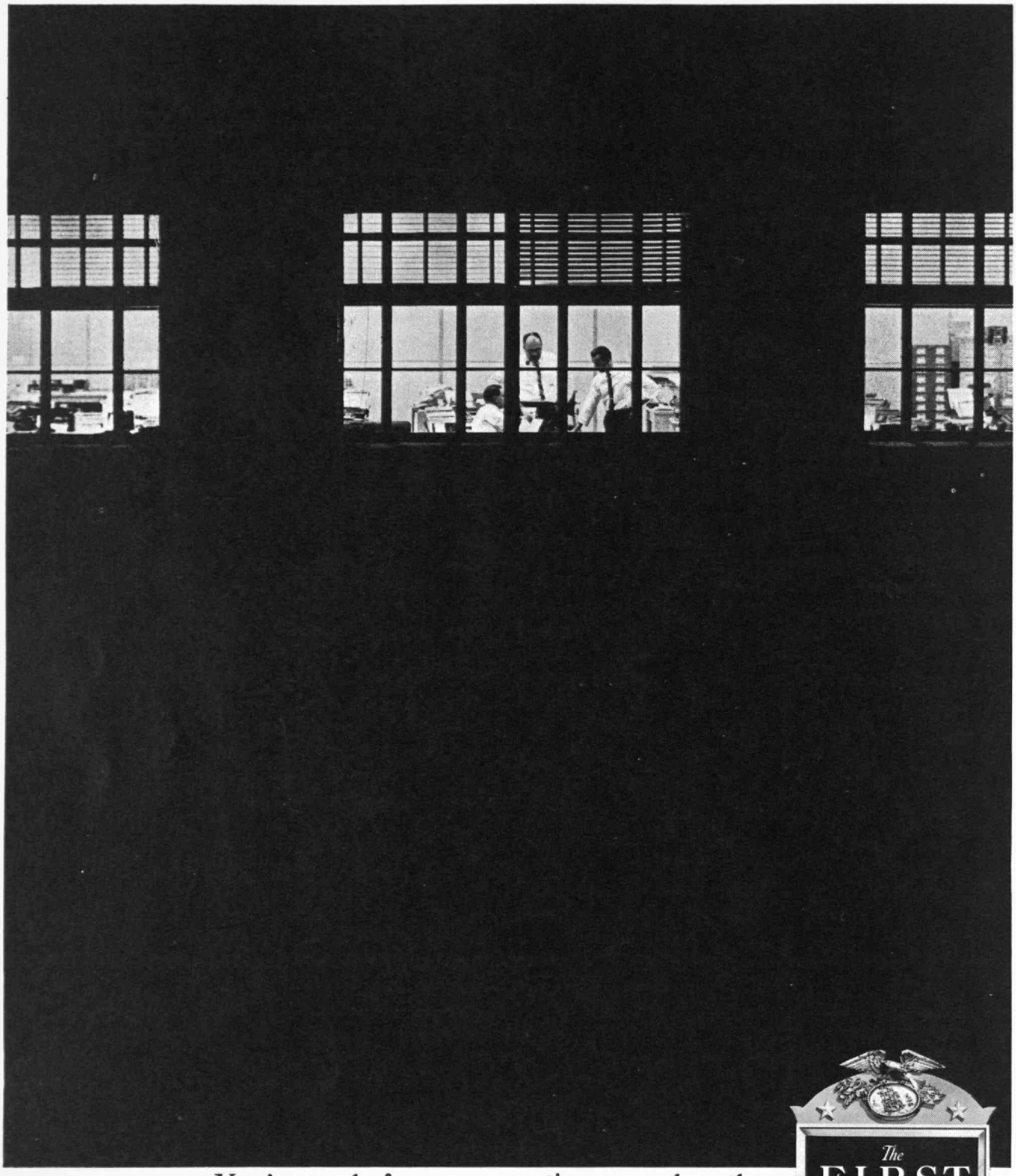
The new national service, known as Law Enforcement Teletypewriter Service or LETS, cuts from days to minutes the time required to transmit criminal descriptions, license checks, bulletins and other vital police data.

The Bell System is also working on other service improvements to help combat crime and protect the public.

The reason is simple enough. We have an obligation to keep providing the best communications possible—for law enforcement or for you and your family at home.

AT&T Bell System
American Telephone & Telegraph and Associated Companies

"Well, The First Team came through again - this refinancing plan really covers all the bases."



You're ready for every contingency when the financial details are handled by The First Team in New England banking: the officers and staff of The First National Bank of Boston and its allied Old Colony Trust Company. Call in The First Team first!

The FIRST NATIONAL BANK of BOSTON · 1784 ·

tions which modern institutions must face and answer:

What basic principles will determine the relative emphasis to be given to undergraduate, graduate, postdoctoral, and continuing education?

What should be the balance between research and the more conventional modes of teaching?

How will educational institutions respond to the growing impact of the federal government upon academic policy and operations?

How far shall universities carry the obligation of service which they may owe to the community and to the nation?

What will be the impact of our growing sophistication of knowledge, which now requires that we deal with problems as complete or partial systems, uniting—for example—elements of pure science and engineering with historical, economic, and political considerations?

The manner in which M.I.T. responds to these questions, Dr. Stratton said, "will determine in a very significant way its future character.

"We have come to a critical juncture in our history," he wrote. M.I.T. is "free of many of the restraints that come normally with age and tradition. There is an enthusiasm for new projects, a willingness to experiment, a freedom from prejudice that are the mark of youth. These are qualities that have made M.I.T. an enormously interesting, exciting place to be.

"But as we adapt to change, as we respond to an expanding array of opportunities, we should make our choices and decisions within a clearly defined structure of ideas and values."

First Objectives

The elements of this structure, Dr. Stratton told the Corporation at the 1966 annual meeting, include these objectives which he believes have "first importance" for the Institute:

- A university's central role is to teach. "I recognize the importance of each of our three traditional roles—of teaching, of research, and of service," Dr. Stratton said. "But in only one of these is the university unique, without counterpart—and that is in the preparation of young men and women for professional careers and for their responsibilities as citizens."
- M.I.T. began as an institution directed toward engineering and architecture, the issues then relevant to the demands of a growing industrial nation. Since then, this very theme of relevance, Dr. Stratton notes, "has taken us further afield," into the physical and then the biological sciences, management, economics, political science, and psychology—all of them "reflecting the interlocking and coupling of science and technology with the whole range of human affairs." Dr. Stratton calls this progressive broadening "inescapable." But, he believes, "as a guideline M.I.T. must always hold fast to the idea of relevance to the needs of contemporary society . . . It seems to me that we have now rather staked out the principal boundaries of our academic territory and that we have come to a proper time for consolidation and deepening."
- Undergraduate education is now only the beginning of a formal professional education. Yet "I am convinced," said Dr. Stratton, "that undergraduate education is destined at M.I.T. to assume an increasingly broad and fundamental character and that students will come to us in growing numbers in the belief that, whatever their ultimate professional goals, this kind of an education will serve them well in an age so powerfully influenced by the social and practical implications of science."
- Graduate education, growing rapidly in response to the increasing complexity of man's learning, "is singularly lacking in a clarity and coherence of educational philosophy," Dr. Stratton declared. He suggested that criteria for academic achievement, for entrance requirements, and for graduate degrees should be consistent in all schools and departments, and a committee of the Faculty is now to make a careful study of problems and policies of graduate education.
- Efforts to maintain and enhance the quality of the Faculty are of greatest importance, Dr. Stratton wrote. "Only through a brilliant and gifted Faculty will we impart the highest quality to our manifold undertakings. We have held this goal constantly before us, and I am grateful for all the help that has come to us from Alumni and friends of the Institute. But we have no grounds whatsoever for complacency. We must not only maintain our present position of excellence, but enhance it."
- The intensity of M.I.T.'s life is one of its assets, Dr. Stratton said. "Much of the Institute's appeal has been the sense that things can be done here . . . And yet I feel very strongly that if we want to reach our highest fulfillment, we must never forget that the special role of a university is to offer a haven and an intellectual climate in which the highly creative, highly individual scholar can fruitfully pursue his own course in his own way with the esteem of his fellows. The climate for action must allow also a place for serenity and reflection."
- The environment for education . . . "the quality of architecture, the care and design of our campus, the evidence of taste and style within and without, are supremely important in giving distinction to an institution.

"What we have to offer the student," Dr. Stratton wrote, "is a total experience that goes beyond the formal curriculum. It is the experience of living as part of a community that shares a common concern for things of the mind and the spirit."

An Infinite Accelerator

Automation is a central force in the growth of modern society and in the western world's continued prosperity and freedom.

This is the thesis of Richard S. White, '48, President of Automation Engineering Laboratory, Inc., in a preliminary presentation to his colleagues on the 17-man Industry Advisory Committee on Automation.

Automation, he says, has increased what man can produce per hour of effort. We have used our increased productivity to assure freedom and education for more and more of our people. Now freedom and education are in turn further increasing our productivity.

By the end of the century, he says, this endless chain of cause and effect will have progressed so that

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70 per cent of our working population will be engaged as student or teacher in education.

"Automation affords man the productivity, and hence the time, the knowledge, and the spiritual understanding he must have to evolve from his present state to that of his future individual freedom in its highest sense."

The committee of which Mr. White is a member is dedicated to "telling industry's side of the automation story," and it is due to present a policy paper by the end of this year. Mr. White's assignment is to show how automation can work "to preserve individual integrity in a complex, affluent society."

Toward Broadening Academic Excellence

It is news to no one that federal support for colleges and universities is heavily committed to science and that its benefits rain unevenly upon a few among the many institutions in the United States.

But the extent of this truism is now revealed by a report of the National Science Foundation prepared for the Office of Science and Technology, covering the government's fiscal year ending in July, 1965.

In those twelve months, federal obligations for the support of educational activities in universities and colleges totaled $2.3 billion. More than 75 per cent of it was for academic science, 60 per cent of it came from the Department of Health, Education and Welfare, and 69 per cent of it went to 15 states (which contain 65 per cent of the U.S. population).

The purpose of the analysis, says *Chemical and Engineering News,* "is to aid administration science planners in carrying out President Johnson's directive to help build more centers of academic excellence in science and technology."

M.I.T. and Massachusetts figure prominently in the N.S.F. report. The Commonwealth is third among the states whose universities benefited from funds in fiscal 1965 (and ninth among the states in population. In general, says the report, there is a "reasonable degree of correlation" between states' populations and their share of the total obligations). The total to Massachusetts institutions in 1964-65 was $151.7 million (6.7 per cent of the national total), nearly $70 million from H.E.W., over $40 million from the Department of Defense, $21.5 million from N.S.F., and $12.5 million from NASA.

In all, New England institutions received just under 10 per cent of the federal funds.

M.I.T. is listed at the top among all American colleges and universities in the amount of federal obligations in 1964-65; the total, including the support for two independent laboratories associated with M.I.T. (the Cambridge Electron Accelerator and Lincoln Laboratory) was $59.6 million, 2.6 per cent of the national total. (Project Apollo research at the M.I.T. Instrumentation Laboratory was not included.) Next-ranking institutions were the University of Michigan, the University of California (Los Angeles), Columbia University, Cornell University, the University of Illinois, and the University of California (Berkeley). Harvard University ranked tenth with about 1.8 per cent of the total.

It's a good system if you like it

There are slots.
Slots need people to fill them.
Someone exists who was born and educated to fill each slot.
Find him. Drop him in. Tell him how lucky he is. Look in once in a while to make sure he still fits his slot.

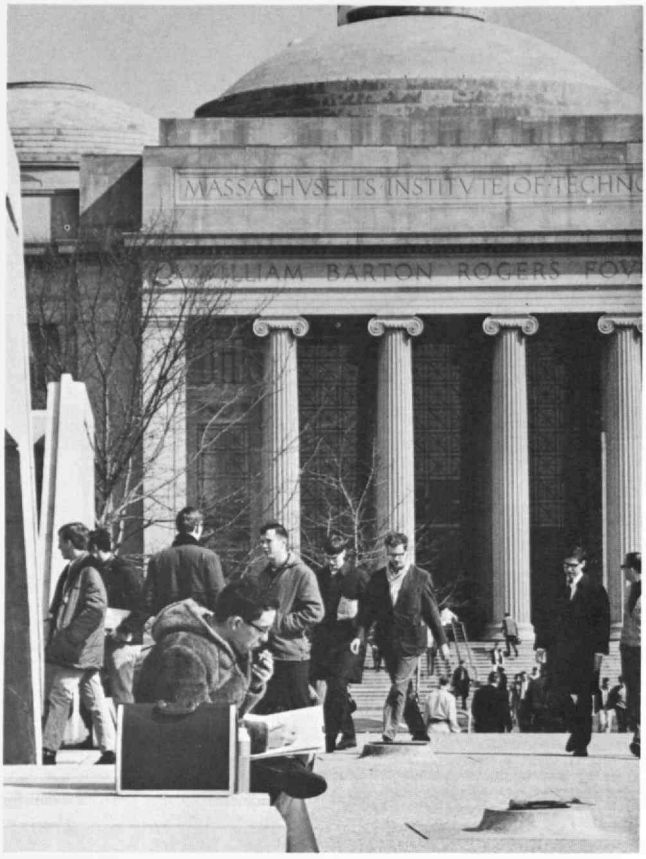
This orderly concept has much to commend it, plus one fault: some of the people most worth finding don't like it. Some very fine employers have not yet discovered the fault. It is not up to us to point it out to them. Luckily for us, we needn't be so tightly bound to the slot system.

We can offer *choice*. A certain combination of the factors diversification, size, centralization, and corporate philosophy makes it feasible to offer so much choice.

Choice at the outset. Choice later on. Choice between quiet persistence and the bold risks of the insistent innovator. Choice between theory and practice. Choice between work in the North and South. Choice between work wanted by the government and work wanted directly by families, by business, by education, by medicine, by science. To the extent that the slot idea helps channel choice we use it, of course.

A corporation such as this is one means of coordinating the strength of large numbers of effective persons. You may feel that in the years ahead this type of organization must change. You may feel that it must not change. Either way, to get a chance to steer you have to come on board.

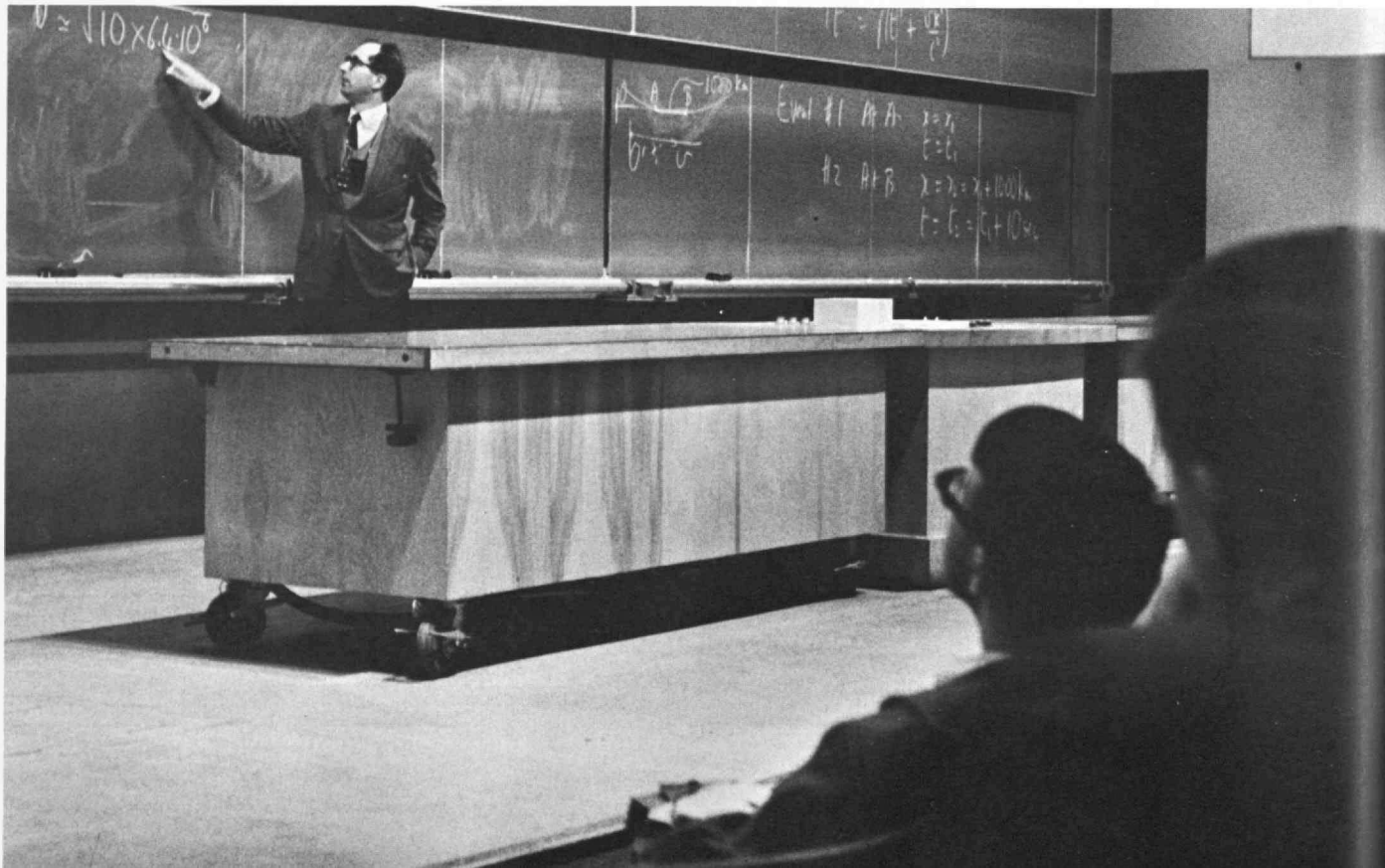
Advice to electrical engineers, mechanical engineers, chemical engineers, chemists, and physicists—still on campus or as much as ten years past the academic procession: while one starts by filling a slot, it soon proves more fun to make one. No detailed list of openings appended herewith. Next week it would be different. G. C. Durkin is Director of Business and Technical Personnel, Eastman Kodak Company, Rochester, N. Y. 14650.



PHOTOS: LEONARD MCCOMBE, FROM THE ENGINEER, TIME-LIFE BOOKS, © 1966 TIME, INC.

M.I.T. students, says *The Engineer* (Time-Life Books, New York, $3.95) are "intensively trained in scientific concepts of engineering rather than in mechanical techniques which may be outmoded in a short time." Lectures and laboratory work are designed "to make a student think through a problem," to use science just as he will throughout his career. For "the engineer, like the scientist, can never know enough."

PHOTO: JAMES MAHOOD, FROM THE ENGINEER, TIME-LIFE BOOKS, © 1966 TIME, INC.



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About 40 per cent of the H.E.W. funds were used for construction and equipping of undergraduate facilities under an Office of Education program; and another large part of the H.E.W. support was for support of medical and health-related programs of the National Institutes of Health. The former figured more heavily in Federal support of smaller institutions, the latter in large institutions and especially those with medical schools.

Conflict in Transport

"Transportation today is in major conflict with many of the social, political and economic values which we cherish," Alan S. Boyd, Secretary of the new Department of Transportation, told an M.I.T. transportation seminar last month, and the responsibility for resolving these conflicts rests primarily at the local level.

"There is no question in my mind," Mr. Boyd said, "that the local political entity should make the policy about where facilities are placed."

Yet the problem will also be a principal concern of Mr. Boyd's new Department which has power to review and recommend transportation policy in all areas except inland waterways. One of the Department's first tasks will be a cost-benefit study to determine who should pay the costs of new transportation facilities on the basis of the benefits received from them. Another will be to seek ways to make transportation systems more consistent with other values which we cherish, he said. And the Department will also seek some means for a more equitable distribution among different transportation modes of the federal funds which are available for subsidy, development, and promotion.

As an example, Mr. Boyd cited the airline industry, where, he said, aviation technology has consistently outstripped the making of economic and political policy within which the airlines have to work. The airlines, having sensed that theirs is now a mass market, have become increasingly aggressive in sales and promotion activities, and they are now "beginning to understand their responsibilities" in the enormous problem of efficient transportation from cities to their airports.

The nation's demand for transportation is rising in response to our gradual shift from rural to urban organization, our greater wealth in disposable income and free time, and the greater complexity of our industrial and government organization. These factors together, Mr. Boyd said, will focus growing attention and responsibility on the Department of Transportation.

Divide and Conquer

"Systems engineering is the engineer's new working tool," writes Augustus B. Kinzel, '21, in his introduction to *The Engineer* by Clifford C. Furnas, Joe McCarthy, and the Editors of Life (Time-Life Books, New York, $3.95). We must understand and use this tool, he says, if we are to solve the problems posed by mass education, urban development, and the war against poverty.

"With it," Dr. Kinzel believes, "we can build a better world, build the bridge from things to people."

Thus in his introduction Dr. Kinzel summarizes the principal focus of a new book which will bring a modern concept of the engineer and his work to a far larger audience than has ever been reached before.

Systems engineering is defined by the authors as the method of planning and grouping work to achieve an orderly completion of vast, complicated projects. There can be all sorts of systems within one large system; a spacecraft consists of a fuel system, a propulsion system, a navigation and guidance system, a communication system, a stabilization system, a reaction control system, and an instrumentation system. It is directed from the ground by a flight control system. Within these systems there are countless subsystems; and the whole spacecraft is part of a still larger engineering system for space exploration.

The power of this new approach, coupled with the power of the computer which enables the engineer to calculate so closely that he can avoid cut-and-try experimentation, make possible today's achievements distinguished by their size, complexity, and character.

Project Apollo, say the authors, is "the greatest engineering system ever attempted, dwarfing in size and scope the most spectacular undertakings of the past." Among other examples of contemporary engineering achievement, the authors describe the Pan American Building in New York, an "engineering monument"; the Ballistic Missile Early Warning System, whose site "transformed a difficult challenge into an almost impossible one"; and the Verrazano Narrows Bridge, "so delicately engineered that its parts fit with tolerances as fine as those of a watch." There are also chapters on the history of engineering, the engineer's role in increasing production efficiency, the human factor in engineering, and the most important fields for future engineering achievement.

A photo-essay on engineering education (opposite) makes generous reference to the place of M.I.T. in the engineering profession today.

"A Rather Dirty River"

Tech's dinghy fleet sported a new decoration in mid-October—ragged orange stripes at the waterline. It wasn't the work of vandals but the result of an accident. Workmen refurbishing the Massachusetts Avenue Bridge used the bright orange paint as an undercoat on the steel framework. Some of the paint spilled into the Charles River Basin and gravitated to the sailing fleet.

That's only one of the problems that confronts sailing master Jerry Reed, '34, maintaining a fleet in the polluted Charles River basin. The sailors appear to have one major problem licked. They have substituted nylon ropes for the old fiber lines, to moor the craft. Acids in the water formerly rotted the fiber lines, usually hemp, necessitating frequent replacement. The nylon mooring lines appear to resist the acids.

Early in September, Secretary of the Interior Stuart Udall, accompanied by United States Senator Ted Kennedy, toured the basin while studying pollution in Massachusetts rivers, and the secretary told a news conference:

"I have seen a rather dirty river."

His description of the river was something of an understatement, because the sailors who guide their craft over the waterway refer to the Charles River basin casually as "the cesspool."

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However, Tech sailors and oarsmen can look forward to the day when they will not have to apologize to visiting crews for the odors and gunk in their waters. A half dozen agencies are at work to clean up the Charles.

The Metropolitan District Commission, which has jurisdiction over the basin, has virtually completed two massive sewer lines, one on each side of the basin, and connected the two to a sewage treatment plant at Deer Island in Boston Harbor; this phase of the program alone cost $110,000,000. A huge detention chamber and treatment facility off Memorial Drive near the Boston University (alias Cottage Farm) Bridge will cost another $4,500,000. Also on the drawing board is an $18,000,000 dam near the old Warren Avenue Bridge and a $90,000 dam at Watertown. Secretary Udall, during his visit, announced a $1,000,000 grant; but in view of the tremendous amount of money involved, his million dollars was little more than a token of Federal interest.

Up river, the town of Millis has under construction a new sewage treatment plant, and at its 1967 town meeting the town of Franklin will discuss building a new treatment plant to replace its antiquated leaching field. The city of Newton has under construction a modern incinerator, which will replace the old city dump on the banks of the Charles. But there are still sewage, dumping, and flowage problems on the upper Charles, all of which are reflected in the condition of the basin water.

The United States Corps of Army Engineers has undertaken a five-year study of pollution in the Charles River watershed. The League of Women Voters has taken an interest in restoration of the Charles and so has the Boston Society of Landscape Architects. WBZ-TV (Channel Four) launched the campaign to clean up the river with programs in its Country-Cide series.

Standing ready to implement all studies of the river and aid all solutions for its restoration and betterment is the Charles River Watershed Association, a non-profit organization representing the 33 communities in the watershed and dedicated to the re-establishment of the Charles River as a clean-water recreational area.

All in all, things are looking up for the Charles River, and the time may come when the basin will actually be as beautiful as it appears from the upper stories of M.I.T.—*F. E. Whitmarsh*

Oceanography: The New "In" Science

Until a few years ago it was possible but not easy to find out what was going on in our studies of the seas. Now it has become easily possible to find out what is planned and hoped for but rather more difficult to know what is going on.

Daniel Greenberg, writing in *Science,* called the U.S. oceanographic effort "orchestrated anarchy." Some 23 government agencies have a finger in the pie, which is variously given as being from $120 million to $310 million for fiscal 1967; the larger figure includes funds for naval warfare programs. The government effort in recent years was guided by a capable but rather toothless Interagency Committee on Oceanography within the Federal Council for Science and Technology.

In June President Johnson signed the Marine Re-

Opportunities at Anaconda

in mining and metallurgy here and abroad, at Anaconda American Brass Co., Anaconda Wire & Cable Co., and Anaconda Aluminum Co.

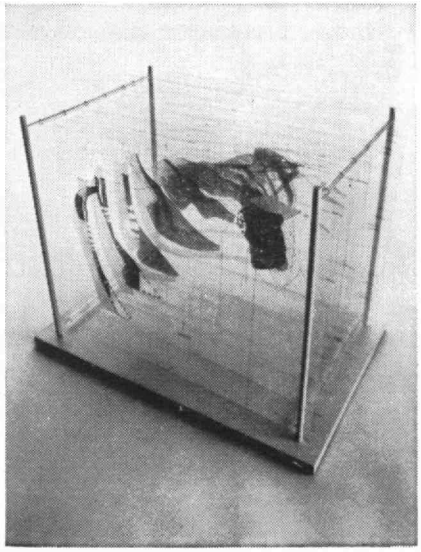
Looking inside the earth for metals

The legendary prospector trudging on foot through the wilderness scours the surface of the earth—with luck gets a hint of treasure inside through an outcropping of ore. But not all ore bodies come near the surface. And pressures to find more metals for the needs of growing populations are so great we can't wait for infrequent bonanzas.

Modern mineral exploration must have "eyes" that see under the earth's surface. Anaconda's program is based on an ever greater understanding of the distribution of elements in the earth's crust and the processes by which they are concentrated into ore deposits. Geology and geological research are thus "eyes" that help outline broad areas of potential mineralization. Gradually, the search is narrowed to smaller target areas through scientific application of geological, geophysical, geochemical techniques and other tools that are additional "eyes" for modern prospecting.

Then these target areas must be tested and evaluated in the light of experience and the critical and significant features commonly associated with ore-forming processes. The three-dimensional geological model shown below was prepared to help Anaconda geologists look under the earth's crust at a later stage in this process of evaluation.

Anaconda is a pioneer in the application of geology to mining and exploration. And it is intensifying and enlarging its program of laboratory and field research at geological headquarters throughout the hemisphere. This opens broad new job opportunities in all areas of earth sciences for geophysicists, geochemists, geological engineers, chemical engineers, physicists, and metallurgists.



Anaconda settles an old argument

The Statue of Liberty is one of the finest examples of natural patina in the world. And for years experts have argued whether this patina is basic copper sulfate or basic copper carbonate. Some felt there should also be a good percentage of chloride salts because of the salty atmosphere whipped up by the winds from the bay.

Anaconda spoiled all the fun by offering to get the answer. With the permission of the statue's custodians, metallurgists from the Research and Technical Center of Anaconda American Brass obtained adequate samples and made an extensive analysis.

The talents and skills of technically qualified men and women will always be needed by Anaconda in important positions in exploration, mining, extractive metallurgy, manufacturing, scientific research, sales, and administration.

If you would like more information about Anaconda or wish to apply for employment, write to: Director of Personnel, The Anaconda Company, 25 Broadway, N.Y., N.Y. 10004.

An Equal Opportunity Employer

Results of X-ray diffraction, semimicro chemical, and wet chemical processes proved a predominance of copper sulfate. This is easily explained by the high estimate tonnage of sulfur-bearing acids produced in New York's atmosphere every day—and by the difference between the free energies of formation of copper chloride and copper sulfate.

Basic copper chloride content was less than five per cent. And basic carbonates are virtually absent because they can't survive in the acid environment. This pleasant little side trip was by no means unrelated to the regular work of the Anaconda research teams. They are concerned with everything that happens to copper metals—and all the combinations of useful properties they can supply. They work on new finishes for copper metals and on industrial corrosion problems. They develop new alloys to meet new needs. They pursue pure research.

Anaconda's research and development are key factors in expanding copper's role in a rapidly advancing technology. It is opening new opportunities for college graduates at Anaconda American Brass in all fields of engineering, in business administration and sales.

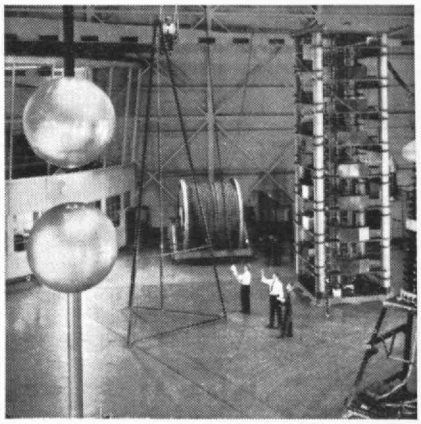
Cable to feed our growing, power-hungry cities

Our big cities keep getting bigger. They need much more electric power every year, in big concentrated chunks of load. And generator output must be carried at high voltage to these new load centers.

You can't string the transmission lines down such places as Broadway, or across 42nd St. So you dig—carry the power in the already crowded space under busy city streets.

Anaconda, anticipating this need, built the best equipped high-voltage research laboratory in the cable business (see below)—and used it to develop the 345,000-volt cable now actually in use. And now, Anaconda Wire & Cable Co. is busy working on plans to satisfy power needs of tomorrow's cities.

Anaconda produces wire and cable not only for the utility industry, but also for modern communication systems,



telephone and CATV; and for countless applications in building and industry. Constant engineering investigation at the Company's four research centers is opening new frontiers of knowledge in wire and cable technology—new opportunities for engineering graduates.

66124

ENGINEERS & SCIENTISTS

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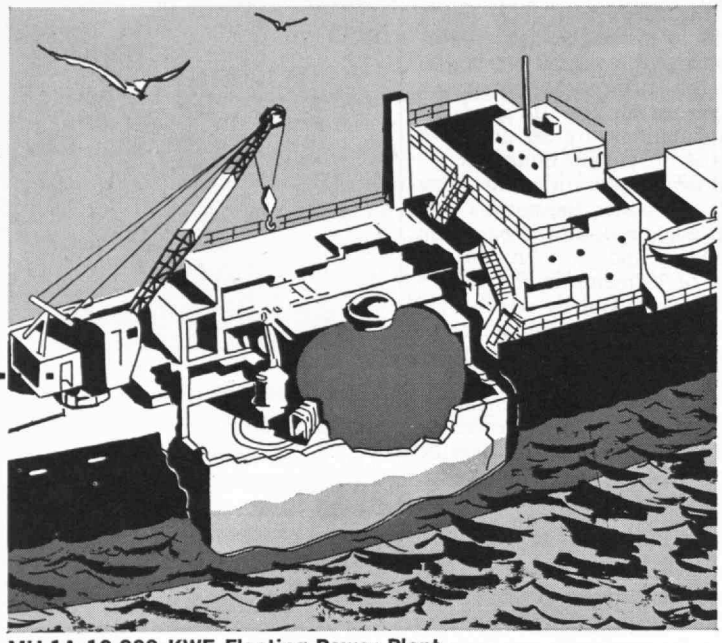
On (and under) The Seas...



MH-1A 10,000 KWE Floating Power Plant

In Space....On Land

From watts and pounds to megawatts and megapounds . . . from the SNAP-29 small nuclear generator for space missions to the TURPS (Terrestrial Unattended Reactor Power System), the scope of Martin nuclear projects and assignments for Engineers and Scientists is great.

Both thermoelectric and thermionic energy conversion devices are employed.

Yes, Martin, which produced the MH-1A Floating Power Plant, the SNAP-19 power source for weather satellites, the SNAP-7E radioisotope generator for a Navy underseas navigational beacon and now has tiny nuclear generators weighing but a few ounces in the design stages, has a wide range of professional challenges and opportunities.

We have immediate openings for aggressive Engineers and Scientists who want to move ahead in the rewarding nuclear electric power field that is basic to our economy.

Opportunities exist in these and other fields for Engineers and Scientists with a wide variety of technical disciplines. A background in nuclear technology is desirable, but not necessary. In fact, many of our engineers and scientists have moved ahead rapidly in nuclear programs at Martin after prior experience in the aerospace and aircraft industries.

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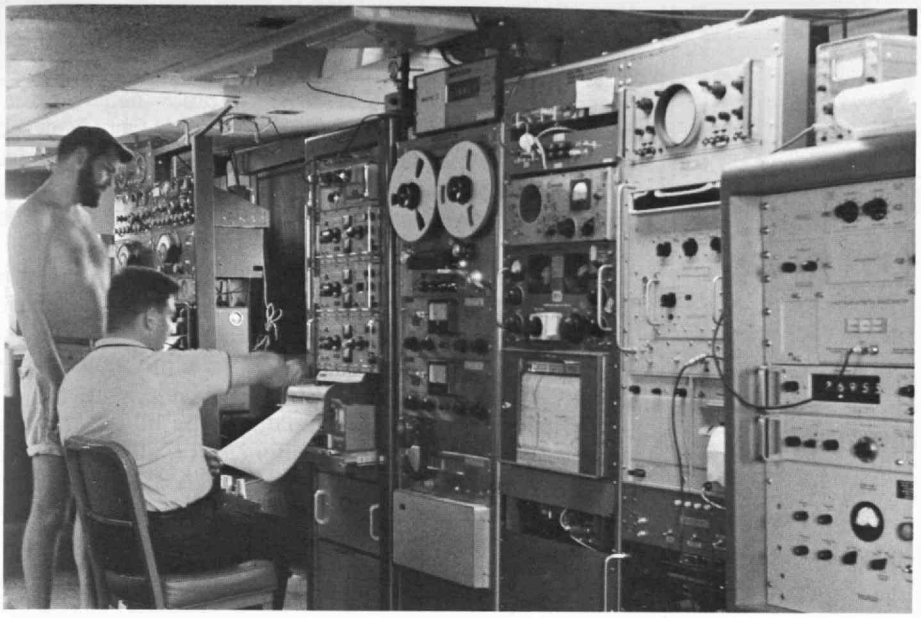

PHOTOS: R. MUNNS AND J. HAHN

As oceanography comes of age, ships' laboratories bristle with sophisticated electronics. But the sea remains unmoved, and sometimes it can be a most inhospitable environment.

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sources and Development Act of 1966, a compromise of many bills to create a Council, somewhat similar to the National Aeronautics and Space Council, chaired by the Vice-president and composed of six cabinet secretaries, the Director of the National Science Foundation, and the Chairman of the Atomic Energy Commission. The bill also established a 15-man commission to review the national program and to recommend how it should be administered. Dr. Edward Wenk, Jr., formerly chief of the Science Policy Research Division of the Library of Congress, was named executive secretary of the Council, and there is keen competition for seats on the 15-man study commission.

Dr. Wenk has stated that the Council will study the present agency programs and investigate the legal and economic aspects of marine research, exploration and exploitation, including the role of private industry.

Although many exciting scientific advances have been made which rarely reach the eyes of the public (how many people know that three major ocean currents were discovered and intensely investigated during the past decade?), the present advances are largely the result of political and economic considerations.

A large number of companies, many in the aerospace field, have branched out to bridge the gap between scientific knowledge of the sea and economic advances. Financially, the oil industry probably is the principal factor. The chemical industry extracts bromine and mag-

nesium from sea water and obtains colloids from seaweed for binders in such everyday products as toothpaste, ice cream, and other foods. Advanced techniques such as ion exchange extraction will make it possible to obtain other minerals from sea water.

Again, it is difficult to establish how much money is involved. One hundred companies are said to have spent some $450 million in 1965 on oceanographic research and development, but some 75 per cent of this money came from the government. The entire U.S. ocean business has been estimated at $3 billion, while a figure of $10 billion is mentioned for all nondefense activities, including fisheries. Some $3 billion of this is for the oil and gas industry alone. If one includes shipping, shipbuilding, and other activities the national figure is some $22 billion.

Many private companies are involved in designing and building oceanographic instruments and submersibles in the hope that the market will increase, and some have been remarkably successful. In other cases instrumentation has been developed without a firm idea of what is needed and—because of a lack of engineers with seagoing experience—without a knowledge of the limitations of the environment. The sea is a hard taskmaster. Nevertheless, the outlook seems bright. Few oceanographers would have expected some 15 years ago that we would have seagoing computers and laboratories crammed with sophisticated electronics.

The U.S. Navy remains the largest user and supporter of marine research, primarily through the Office of Naval Research which contributes heavily to private and university oceanographic facilities. In August the Navy reorganized its ocean sciences structure and established the Office of the Oceanographer of the Navy with Admiral Odale Waters to "insure an integrated and effective naval oceanographic program." In the Deep Submergence Systems Program (DSSP) the Navy also is making an intensive effort to obtain a capacity to operate and retrieve objects at great depths.

Two recent reports stress the economic factors. "Economic Benefits from Oceanographic Research," published by the National Academy of Sciences in 1964 ($2.00), summarized the benefits, cost of investment, and growth of gross national product which may be expected from the use of present knowledge and investment in future expansion. "The Businessman's Guide to Oceanography," a recent survey by students at the Harvard Business School, also indicates the growth of interest and investment.

Meantime, the Panel on Oceanography of the President's Science Advisory Committee (PSAC or PSAC-POO, *sic!*) brought out a superb report, "Effective Use of the Sea," in June, 1966 (Government Printing Office, 60¢). Its authors' conclusions ought to be required reading for anyone with an interest in the sea.

If most present discussions center around the use of the ocean, where does this leave basic research? The National Science Foundation and other agencies continue to support individual scientists and educational programs—as well as their funds allow. Oceanographers have not been notably successful in attracting grants

GYORGY KEPES, M.I.T. Professor of Visual Design, at the 1966 International Design Conference in Aspen, Colo.: "To have a concept about our world, to have an understanding of what we are, we have to have the fullest awareness of what happened before us and what is happening to us now . . . One of the really great tasks today is to find a way to feel, recognize and express that 20th Century life is not a menace but one of the greatest promises in human history. In spite of the hydrogen bomb, automation, or whatever you are afraid of at the moment, this century has more potential quality than existed before."

from foundations, except generally for small grants for fellowships. There are few if any alumni in the field who can be counted on to help. Industry and sympathetic private individuals help in a minor but important way to support some basic work which otherwise could not be done.

A bright spot on the horizon is the passing in October of the National Sea-Grant College and Program Act of 1966. Based on the concept of the Land-Grant Colleges which brought American agriculture to its eminence, this bill provides some $5 million this year and $15 million in 1967, provided part of the costs are met from other sources.

And a new federal agency, the Environmental Science Services Administration (ESSA), plans to establish a major research center on the East Coast to house its Institute of Oceanography and base the ships of the Coast and Geodetic Survey. There is keen competition for this major center, and a location near other oceanographic facilities, universities, industrial interests, and, especially, extensive marine library facilities is being sought. Several Massachusetts cities are making strong presentations.—*Jan Hahn*

"Computer Hacks"

Computer firms, communications lawyers, and the Federal Bar Association may be working overtime to devise new controls on computer users.

Computer users across the country are feeling the effects of one of M.I.T.'s newer breeds, the "computer hacks," according to the following by Richard B. Stern, '69, in *The Tech:*

Tech's many computer facilities have proved an easy target for many 6.47 (nee 6.41, 6.45) graduates and others. For example, the PDP-1 computer system is readily available to qualified students. One ingenious Techman, it's believed, managed to tap the national government data line that used to be attached to the machine. This enabled him to transcribe confidential information straight from such installations as the SAC base in Omaha, Neb. These operations also had the effect of jamming the government's own lines, causing them considerable annoyance.

The versatile PDP-1 system has also lent itself to other uses. For example, "space war" is an exciting game for two people and a $500,000 computer. The PDP-1, when programmed properly, will read out a display of two spaceships, each maneuvering in space, trying to torpedo the other ship. Space war addicts had been

The Trend of Affairs

known to play for days on end until the Institute clamped down and confiscated the all-important control console.

M.I.T.'s Project MAC (Multiple Access Computer/ Machine Aided Cognition) is a prime target for "hacks." This system can be shared by users all over the world and user time is therefore at a premium. This also means that pranks may be printed out at thousands of various locations all over the globe. Although the system code is highly confidential, it has been broken accidentally by students from time to time.

A team of math students wired a computer so that one night all the telephones in one large building rang simultaneously. The switchboard operator, seeing every plug lit, believed that there was a fire and called the fire department.

Pranks such as these have far-reaching implications, and are a source of concern to many top firms. For example, it would be easy for a computer operator to embezzle money from a bank because there would be no written records, no duplicate slips, or other traces of the "transaction." The embezzler could program a withdrawal and then replace it, programming a correction.

The most crucial problem of the situation is that the computer revolution will eliminate most written records. The computers can be tampered with and their memory is not infallible.

Postdoctoral Fellowships

Applications will close on December 12, 1966, for National Science Foundation postdoctoral fellowships in the sciences (including engineering and certain of the social sciences) for 1967-68. The fellowships are intended primarily for "young scientists who have demonstrated special aptitude for advanced training."

A doctor's degree or equivalent research experience is required, and each applicant must present a plan of postdoctoral study or research. Information is available from the Fellowship Office of the National Academy of Sciences—National Research Council, 2101 Constitution Avenue, N.W., Washington, D.C., 20418

Entrepreneurial Fathers and Sons

Preliminary studies of a group of executives who participated in founding new M.I.T.-related enterprises show that characteristic home environment and personal background can be associated with their "entrepreneurial" actions.

Entrepreneurial fathers are more likely to produce entrepreneurial sons, according to Edward B. Roberts, '57, Associate Professor in the Sloan School of Management.

An individual's home environment and attitudes that seem to be embodied in his religious background, Professor Roberts says, are likely to have strong influences on his goal orientation, education, and whether or not he becomes an entrepreneur.

Technical entrepreneurs whose fathers had high occupational status were educated sooner and to a higher level than those whose fathers had low occupational status. Technical entrepreneurs who had self-employed fathers were educated usually to around the master of

science degree level, the median education of the entire sample. The predominance of such educational behavior for entrepreneurial sons may be explained by their goal orientation. Low levels of education usually do not provide sufficient knowledge to run effectively a technically based enterprise. Higher levels of education appear not to be necessary and may be regarded as overpreparation by a would-be entrepreneur.

In the Service of Humanity

Like all scientists, chemists have truly moved out of the laboratory into the universe. But it remains to guarantee that their work will move humanity still further toward a golden age.

Chemistry, dealing with the properties and behavior of matter, is "a common meeting ground for nearly all the other sciences," Glenn T. Seaborg, Chairman of the U.S. Atomic Energy Commission, told the audience at the dedication of the new chemistry building at Brookhaven National Laboratory this fall.

"One of the little recognized strengths of a good chemist," said Dr. Seaborg, "is his broad background, perhaps one of the broadest of all the physical scienists."

Yet, said another prominent chemist this fall, there remains danger that the fractionation of chemists into species and subspecies will jeopardize the vital two-way information exchange with the world outside chemistry.

"As busy chemists," said Charles A. Thomas, '24, Chairman of the Finance and Technical Committees of the Monsanto Company at the President's Dinner of the fall national meeting of the American Chemical Society in New York, "we have overlooked the psychologists' findings that as any group of individuals expands in numbers it becomes increasingly concerned with internal matters and decreasingly concerned with the broad issues of the real world outside the group."

The key issue for chemists, said Dr. Thomas, is to "recognize the forces and pressures at work in the world today for what they are and keep our science where it belongs, in the service of all humanity."

The Moral Responsibility of Education

(*Continued from page 27*)

Knowledge and feeling are isolated from each other. So we arrive at the curious paradox that in our period feeling has become more difficult than thinking."

Ideas as the Illumination of Life

Here we must say plainly and unmistakably that any direct manipulation of the feelings is obviously not only wrong but immoral. It is this divorce of idea from feelings, education from sensibility, which is in itself highly suspect, if the individual is to achieve integrity. A collection of ideas, no matter how vast, without roots in feeling sooner or later proves sterile and fleeting, usually about six months after graduation. This indeed is why a college education is very temporary for too large a number of students.

There is a very significant negative observation to make in this area of our perplexity, and that is that there is no direct approach to feeling. Feelings are not

(*Concluded on page 48*)

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(*Concluded from page 47*)

trained by manipulating feelings; they are the result of the fulfillment of two conditions—one, a respect for the whole person, and second, a distinction between ideas that are engendered by ideas and those which are the articulation of experience itself.

Where there is a whole person, idea and feeling are naturally associated. Where experience moves by reflection into an idea, there is also feeling. In education, then, as in religion, our attention should never be on feeling primarily; that would be quite immoral in the deepest sense of the term! Instead, our attention should be on ideas as the illumination of life, both in respect to the individual's total existence and to the elucidation of experience. A sort of separate stock in trade of ideas is artificial and deceptive.

A Binding Integrity in Life

This brings me to a third need for rivets, for creating a binding integrity in the life of the educated man or woman. It can be seen if we extend the training of feeling a little further into the region where the choice of excellence is made. How do we train the judgment so that excellence becomes a deliberate and discriminating power in the student. Without that, obviously education is a strange anomaly, to say the least.

You can see plainly what I have been trying to do. I started by saying that we needed rivets to tie together our curriculum, not for its intrinsic or theoretical coordination, but within a man, so he could be assured of his integrity, not by subtracting one aspect of life from all others and trying to find satisfaction of his many-leveled consciousness in that one alone, but by learning how to be a whole person, alive at every level. Secondly, I pushed into the depth where man feels, and feels deeply, where he is himself involved, where things mean something to him, and he either fights them or defends them. This is where truth recovers its motivating power, its satisfying joy. It is no longer a tumbleweed, a loose opinion drifting over desert roads. Finally, I reached the question of intimate judgment, namely, what do we count excellent and worthy of our loyalty?

If I were to characterize this kind of education, I would say that it deliberately strives by imagination and insight to emulate an open world, a world where all levels of life and all sections of knowledge open out on each other. There simply are no walls except those we erect by arbitrary sign language and private prejudice. It is open between science and religion, between religion and the arts, between the arts and industry. It is open between intelligence and sensibility, between reason and faith, between idea and feeling. It is open between the past and the present, between tradition and revolution, between the classic and the contemporary. It does not come to us naturally or culturally all one, but it does have the possibility of becoming one in the imagination and integrity of man.

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Humanities Major

M.I.T. now has its first full-scale humanities major.

For the first time, undergraduates are now able to devote their junior and senior years exclusively to studies in history, philosophy, literature or music. The program leads to a bachelor of science degree in humanities and science.

According to Roy Lamson, Professor of English, who is in charge of the new program, M.I.T. now attracts a significant number of students who could probably succeed as well in either science or humanities. They come because they are conscious of the science-oriented character of M.I.T.'s community and of the Institute's high academic standards and the corresponding prestige and authority of its diploma. Indeed, for several years freshmen classes at M.I.T. have been scoring higher in verbal aptitude than entering freshmen at most liberal arts schools.

Students electing the new major still have to satisfy the Institute's core requirements in science during their freshman and sophomore years. In the junior and senior years, however, they need take no science at all. Instead, the program calls for eight courses in a single humanities discipline and four courses in a second humanities discipline, which may be chosen from such fields as history, literature, philosophy, music, visual arts, or one of the social sciences.

The major also includes 12 courses of unspecified electives which may be chosen from more than 60 offered by the Department of Humanities, including such subjects as the Bible, Shakespeare, American foreign policy, the Russian Revolution, metaphysics, symbolic logic, twentieth-century music and the string quartets of Beethoven.

In his senior year each humanities student participates in a humanities seminar, usually conducted by a distinguished visiting professor. Another important part of the program is a senior thesis, which involves independent study under one or more faculty advisors. This is equivalent to the honors program in other leading universities.

"We proposed the new major because we felt that a university ought to provide a greater freedom of choice to individuals with multiple tastes and talents," Professor Lamson said. Among those expected to show special interest in the new major, he believes, will be students seeking humanities programs which have special relevance to an age dominated by technology.

"From the undergraduate's point of view," said *The Tech* in commenting on the new program, "the new major provides one more option in choosing the academic program best suited for him."

Nobel Laureates

Robert S. Mulliken, '17, the winner of the 1966 Nobel Prize in chemistry, also is Ernest DeWitt Burton Distinguished Service Professor at the University of Chicago. He holds a bachelor's degree from M.I.T. in chemistry. His father, Samuel P. Mulliken, '87, was a member of the M.I.T. Department of Chemistry from 1895 to 1934. Ernest H. Huntress, '20, Professor Emeritus who was a close associate of Samuel Mulliken, remembers Robert as "a dreamer, the kind who would go off in a corner and come back with the theory all worked out."

Dr. Mulliken's chemistry prize was given for "his fundamental work concerning chemical bonds and the electronic structure of molecules by the molecular orbital method."

The French Nobel laureate in physics, Alfred Kastler, is a close associate of Charles H. Townes, M.I.T. Institute Professor (physics) whose invention of the maser brought him the Nobel Prize in 1964. Dr. Kastler's citation was for "the discovery and development of optical methods for studying Hertzian resonances in atoms." Some French observers claimed that Dr. Kastler's work is more fundamental than that of Dr. Townes and that this year's award is "the repair of an injustice."

Among Dr. Kastler's close collaborators is Jean Brossel, '49, who studied at M.I.T. 10 years ago with Professor Francis Bitter, then a member of the Physics Department. "Our work began," Dr. Kastler said according to the United Press, "when Dr. Brossel returned from the United States. Everything stems from an idea of our American friends."

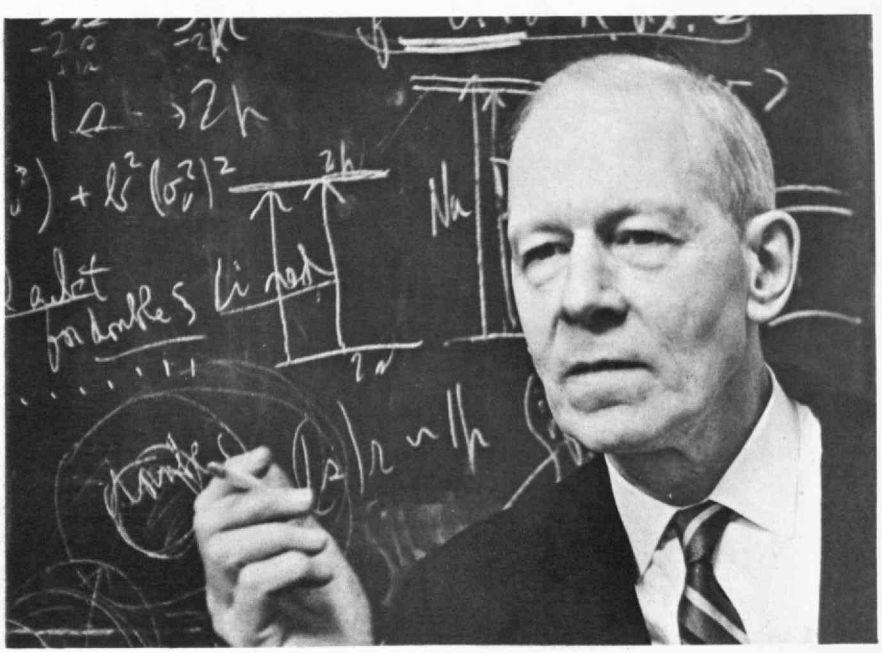
Robert A. Alberty

Dean of Science

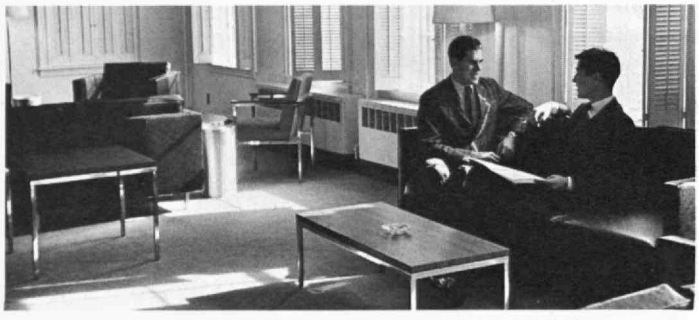
Robert A. Alberty will be dean of the School of Science and professor of chemistry at M.I.T. effective on February 1, 1967.

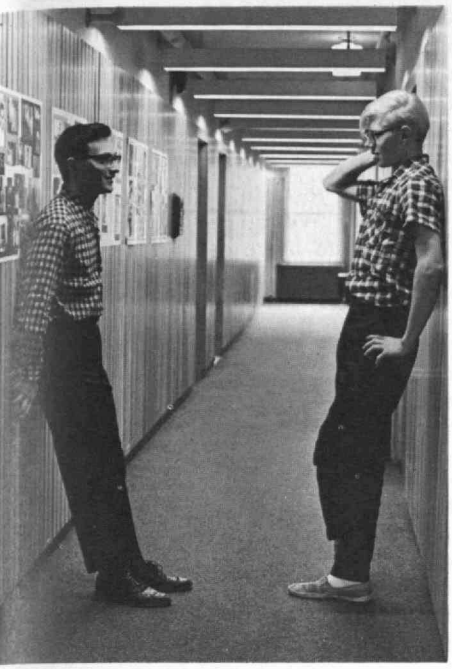
Dr. Alberty is a physical chemist who has worked extensively in the field of biology, especially on enzymes and blood plasma proteins. He is now dean of the Graduate School at the University of Wisconsin, where he has been a member of the Department of Chemistry since 1947 and for one year was

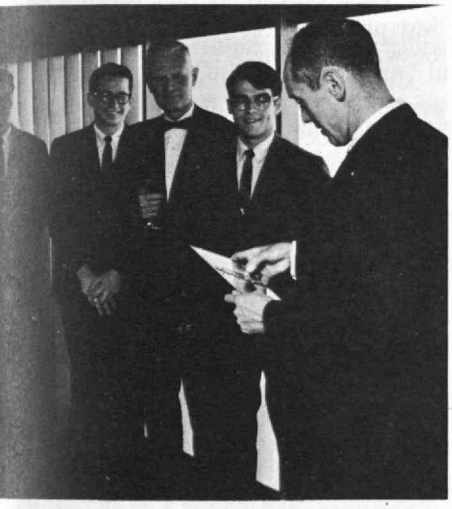
Robert S. Mulliken, '17, the 1966 Nobel laureate in chemistry, does not try to explain the details of his work to laymen. "What molecules are doing is just about as complicated as what people are doing," he says.

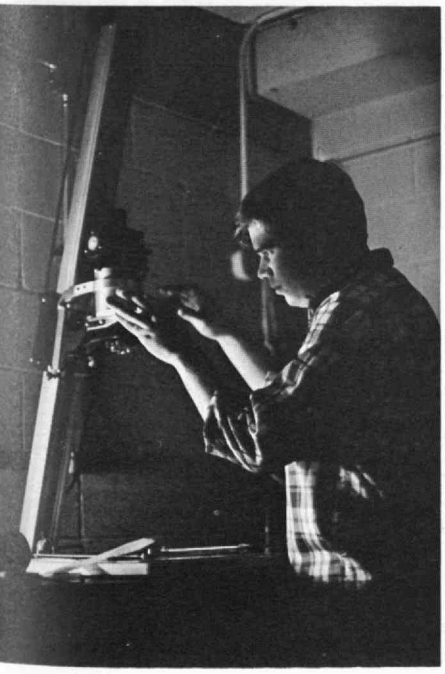


The Alumni Fund in the service of M.I.T. undergraduates: a new kitchenette and social area in the East Campus Houses; $150,000 for undergraduate scholarships (including one award to Barbara R. Padgett, '69, shown at the right with Jack H. Frailey, '44, Director of Student Aid); a loan through the Independent Residence Development Fund for a new home for Zeta Beta Tau; new lounges in Burton, Baker, and Ashdown Houses and in the East Campus Houses, where the plaque for the Frederick G. Fassett, Jr., Lounge was presented in November to Joseph Ferreira, Jr. '67, East Campus President, by Dean Kenneth R. Wadleigh, '43; a new darkroom in East Campus; and the Harold E. Lobdell ('17) Dining Room in the Student Center (far right).









associate dean of letters and science. He was born in Kansas in 1921, studied for B.S. and M.S. degrees at the University of Nebraska, and then entered the University of Wisconsin for his Ph.D. after wartime research work on the fractionation of plasma proteins.

Dr. Alberty's other research has been concerned with the electrophoresis of proteins, ionization and complexing constants of substances of biological importance, enzyme kinetics, deuterium tracer experiments, nuclear magnetic resonance, and very fast reactions in solutions. In 1950-1951 he was a Guggenheim Fellow at the California Institute of Technology working on the physical chemistry of enzymes under Professor Linus Pauling, and in 1955 he was a visiting lecturer on the physical chemistry of enzymes at the University of California. He spent the spring semester of 1961 at the Max Planck Institute in Gottingen, Germany.

Dr. Alberty succeeds Jerome B. Wiesner as Dean of Science; Dr. Wiesner was appointed provost of M.I.T. last July, and he will continue as acting dean of the School of Science until Dr. Alberty arrives. Dr. Wiesner describes his successor as "a distinguished scholar whose contributions on the application of physical chemistry to biological problems have been notable."

Dr. Alberty holds the Eli Lilly Award in biological chemistry, and he was elected to the National Academy of Sciences in 1965.

A Not-so-Distant Splash

There is something subtly satisfying about listening for—and hearing—the distant splash when dropping your coins into a wishing well. But how many of us would continue to be tempted to toss our change if we knew that there would be no returning sound?

Here are the splashes of more than a few coins—the contributions of some 16,000 alumni to the 1966 M.I.T. Alumni Fund, a total of over $2.2 million. The pictures are representative of the uses to which this money has been put.

Like the proverbial wishing well, the Alumni Fund has, for 26 years, been a vehicle for bringing to fruition the cherished wishes of many. For some it has made possible the unique education offered at M.I.T., which might otherwise have been denied. For others, it means enhancement of this education through upgrading of the campus environment.

How Do You Compute This?

Gavin Clowe is a two-sport man, and he finds time for both at M.I.T.

By Fran Rosa

Gavin Clowe should be right at home preparing a program for a computer. He stands 5-10, weighs 155 pounds, and wears glasses. He doesn't look like a soccer player, let alone a wrestler. But he's both—and if it's difficult to fit him into a picture as an athlete, it's even harder to reconcile two such unrelated sports. Clowe, though, is a two-sport athlete and don't try to put him through a computer. Just talk to him.

Gavin's a junior at M.I.T. His home is in Sayville, Long Island, and that's where he learned to play soccer and to wrestle. He likes the aloneness of wrestling, the togetherness of soccer.

In neither sport will he be an all-American, nor could he care less. He's the image of sports at M.I.T., sports for fun, a release from the daily grind of studies. That's why he's worth noticing—especially at the height of the college football season. He found his way into sports as an outlet, found his way to M.I.T. because of his interest (and ability) in math, and has blended the two quite nicely.

He has had six years of experience in soccer, and recognizes it as a sport that is alien to American-born athletes. He has played two years at M.I.T. and will say quite candidly that he "didn't score a goal all last season." So what!

He wrestled in high school for four years, will try it this winter at M.I.T., now that he has his academic feet on the ground.

As a freshman in high school, Clowe was a 95-pound Hercules. "I was sure I was too small for football," he said, "so I decided to try soccer. I wasn't sure that I wasn't too small for soccer, too." At any rate, he made the freshman team, as a halfback. The following year he moved up to the varsity. The team needed a goal-tender and he tried for the position. He won it—and played it so well that he was named the league's all-star goalie.

That should have established him forever more as a goalie. It didn't.

"In my junior year I volunteered to play on a line and the coach started alternating me," Clowe related. "I didn't like it at all and told him. He said 'get in shape.' I told him I was in shape and to prove it I challenged a friend of mine on the cross-country team to a race. I beat him and got a regular job as a forward."

Perhaps there was an athlete in that slight body.

Later in his high school career he injured his right knee. "I had some trouble with it," he explained. "Nothing really serious, but it bothered me." He didn't sit around. Instead, he'd take a soccer ball and kick it left-footed against a cement wall at the high school. "I play on the left side of the field now," he said, "because I have a left foot." Translated, that means he can kick with his left foot.

Perhaps there was a determined athlete behind those glasses.

Clowe finds he can't relate his interests in two sports as far apart as soccer and wrestling. "Soccer is a team sport, the kind of thing where each player contributes something to the team. Wrestling is a team sport, too, but in a different way. In wrestling you're on the mat alone with your opponent; it's man against man. There may be a little more self-satisfaction in wrestling. A wrestler is on his own."

Nothing he does in soccer is especially helpful to him as a wrestler and wrestling doesn't make him a better soccer player. "They're really two unrelated sports," he said. "In soccer you should have a slender upper body and muscular legs. In wrestling it's the other way around. Your upper body should be muscular. Soccer builds up your wind and soccer requires stamina. Wrestling requires strength."

Gavin was an inside left on the freshman soccer team at M.I.T., then a halfback last season. "We went into almost a defensive setup so that we used four fullbacks and my position became sort of the first line of defense. Under the setup it was a real running position. I didn't score a goal."

After he played in high school, Clowe saw a few professional games at Randalls Island and was impressed with the effortless way the pros left no empty areas. "Often in college and amateur games there are these empty areas and you'll see players running to cover them," he pointed out. "But the pros are so well organized that they seem to be in the right spot at the right time. They're running all right, but you don't get the feeling of running and scurrying that you can get in an amateur game."

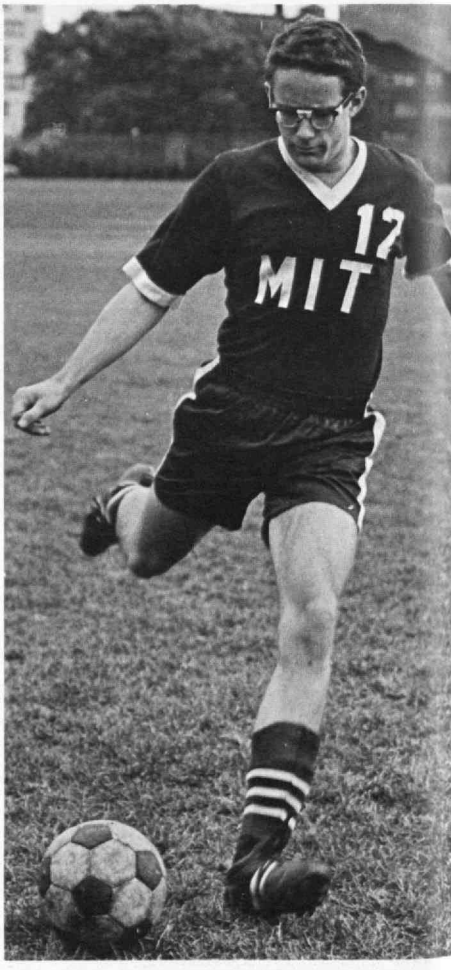
Clowe has been a member of Alpha Tau Omega since he first arrived at M.I.T. He has lived there for two years, but took an in-town apartment this term. "We can only house 26 men so I had to move out."

Gavin comes from a long line of soccer players, his father, his brothers. His brother Brian played before him at Sayville High School and is now a senior and center forward at St. Lawrence. "I've never played against him, but I'd love to have that opportunity," he said. He has an older brother, Lonny, recently returned from Viet Nam, a younger brother Allen, a high school freshman. Their father, Charles, is an assistant superintendent of schools.

"He used to tell us he played a little soccer and I didn't quite believe him," said Clowe, "but he dug out some old pictures and there he was playing soccer. I was startled not only because he was playing soccer, but also because he was so young."

Clowe refuses to concede foreign students are automatically better soccer players than Americans. "I've played with and against foreign students and the only edge they have on

PHOTO: OWEN D. FRANKEN, '68



us is experience," he said. "Their natural abilities are not greater than ours and not all of the foreign players are outstanding. They don't kick the ball any harder, but they do handle it better. That's a skill they've developed through experience. They free lance better, but often they'll free lance and not pass the ball off to an American teammate when they should.

"I think they don't have enough respect for the American soccer players. The ones who are good got that way through experience. You take an American college boy and figure he has played maybe three years of soccer in high school—if his school had soccer. The foreign players, on the other hand, have been playing soccer for 10 years before they even get to college. I can see how helpful this is, for I feel that I improve every year. I know I'm getting better. You know, once I got into soccer, I sure didn't want to leave it."

Gavin hesitates to say that perhaps he likes wrestling better than soccer. "There's something about wrestling, this business of being on your own," he said, "but soccer is a running game and I like to run. If the seasons didn't come at the same time, I think I'd like to try cross-country."

He also hesitates to talk about his kick in soccer. "I don't try to put the ball at any special part of the net when I have a scoring chance. I shouldn't even be talking about scoring after last season. Anyway, if I can, I try to hit the ball just inside either post. Generally, though, all I'm concerned with is getting the ball on the net."

He pointed out that there is virtually no way to study an opposing goalie's moves and spot his weakness. "In college soccer you usually face a team only once in a season," he said, "and that's the only time you see that particular goalie. You can't spot his weakness in one game. Sometimes you can make a pretty good guess by watching where he positions himself in the goal. This can indicate what he considers his stronger side. The thing to do is to keep the ball on the goal."

Only a handful of people watch soccer games at M.I.T. but that doesn't bother Gavin Clowe. He's not playing soccer for the cheers of a crowd. He plays because he likes the game and because it's fun. But he's athlete enough to know that winning is twice the fun—anywhere.

Fran Rosa is a member of the contributing staff of *Sunrise*, the magazine of New England sports, where this article first appeared in the October, 1966, issue. It is reprinted with permission.

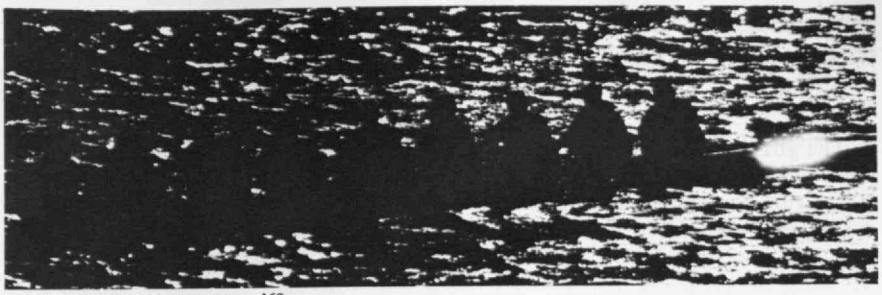


PHOTO: JEFFREY M. REYNOLDS, '69

The Head-of-the-Charles Regatta is becoming a fall tradition on the Charles River, and M.I.T. has an important share in it. The competitions, arranged with sponsorship of the Boston *Globe* and the Cambridge Boat Club, include single sculls and four-oared and eight-oared shells over a course on the middle reaches (near Harvard) of the river.

M.I.T.'s lightweight eight placed second, fifth, and sixth, by far the best showing for the cardinal and grey. While the University of Wisconsin won the Charles River Grand Challenge Trophy for heavyweight eights and Northeastern took second and third, M.I.T.'s boats came in eighth, ninth, and tenth. But Lauren M. Sompayrac, '63, an M.I.T. graduate student working in the Cyclotron Laboratory, won the senior lightweight singles rowing for the Cambridge Boat Club, and William F. Brace, '46, Professor of Geology, brought the Cambridge Boat Club second-place honors in the veteran singles.

An Institute Gazette

Historically, unrestricted contributions to the Fund have been used for the benefit of students, providing financial aid to some and a better environment to all. Many designated gifts are also committed to these ends. These pictures include a selection of specific examples to which recent Alumni Fund appropriations have been applied. The Alumni Fund urges you to join in this important contribution to the well-being of M.I.T. students. Every gift, regardless of size, is needed.

IVY Network

M.I.T.'s student-operated radio WTBS has joined the IVY Radio Network as an affiliate; it will thus carry IVY features and advertising to its campus closed-circuit audience. Other affiliates include stations at Williams, Colgate, Rutgers, and Lehigh.

Co-eds Up and Down

M.I.T.'s distaff-side athletes had an up-and-down fall season.

The co-eds' sailing team has yet to taste defeat on the Charles River. They have sailed in 25 regattas, averaging eight schools per competition. The record is three New England championships (the last one sailed this year on October 29 and 30), thirteen first-places, and seven runner-up finishes. This season's victories included the Radcliffe Invitational Fall Regatta (thirteen New England schools) and a smaller meet at the University of Rhode Island on Narragansett Bay.

PHOTO: JEFFREY M. REYNOLDS, '69, FROM THE TECH

M.I.T. co-eds sailed home first in the New England Women's Intercollegiate Regatta at the end of October to claim the ManLab Trophy, named for its sponsor, Manufacturing Laboratories, Inc., Cambridge engineering firm.

Stars for the season were Mrs. Alix B. Smullin, '68, Fredda J. Hoffman, '68, Mrs. Ruth B. McDowell, '67, and Ruth C. Peterson, '67.

Meanwhile, in less official intercollegiate competition, the M.I.T. women's crew met Wellesley on November 3 and were "clobbered by more lengths than it is gentlemanly to mention," said Fred Brady in the Boston *Herald*. The official times over a 2,000-foot course: Wellesley 1:49.6, M.I.T. 2:11.2.

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The girls have been rowing at M.I.T. since the opening of the Pierce Boathouse this September. Elaine A. Lancaster, '67, transferred from Wellesley to M.I.T. last year and brought her enthusiasm for crew with her; and David L. Waltz, '65, agreed to coach.

"Do women make good oarsmen?" The *Herald* asked him.

His reply: "I'll say this: they catch on much more rapidly to the style. I think with a little more practice they can be more competitive."

"Their problem was with the oars," said last year's Wellesley cox, who was in the audience. "They're used to oars a foot longer. Couldn't you see their oars splashing and skimming?"

Pass-Fail

The pass-fail system, substituting one of two grades (either "pass" or "fail") for the full range of A to E now used at M.I.T. is coming in for active student discussion.

The "pass-fail" system already operates at the Institute in the case of the undergraduate seminars taken by freshmen and the indepartmental project subjects taken by some upperclassmen. Now two alternatives for extending the system are being proposed.

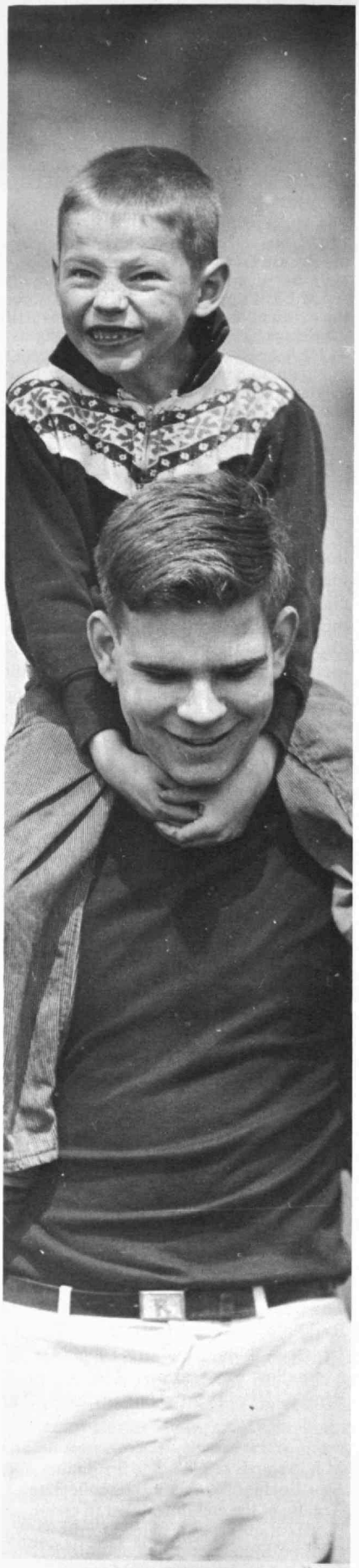
One suggests that each student be permitted to take one subject per term above his normal load on a "pass-fail" basis; the other that one subject per term within the normal load be designated as a "pass-fail" subject. The advantage claimed is that students will thus feel freer to take subjects in fields about which they know little—which some do not now risk because they fear a low grade and a consequent drop in their "cum" averages. There are also problems—such as what to do about a "pass-fail" grade in a subject you later want to have high on your transcript for graduate school entrance.

The student Committee on Educational Policy is continuing the discussion.

Chemistry Grant

Standard Oil (Indiana) Foundation, Inc., has made a $250,000 grant to M.I.T. which the Institute will use to strengthen teaching and research in chemistry.

Commenting on the grant, Dr. James R. Killian, '26, said: "M.I.T. has had a long-standing association with Standard Oil (Indiana) Foundation and its sponsor, Standard Oil Company (Indiana). The decision of the Foundation to increase its level of support to the Institute is both timely and generous. The unrestricted nature of the



Helping Those Who Need Their Help

Personal satisfaction and vital involvement for M.I.T.'s imaginative achievers

By R. Eugene Bullock

On that grim day in November, 1963, when a stunned nation learned of the death of its young President, his call for a new commitment by Americans became suddenly poignant and challenging. On the campus in Cambridge that mood crystallized in the development of a new campus organization, known first as the Social Action Committee and later as the Social Service Committee, to give students a way to share the social burdens which surrounded them in Cambridge and Boston.

In the intervening years the M.I.T. Social Service Committee (SSC) has grown and flourished. Despite an almost Spartan academic regimen, hundreds of M.I.T. students find an occasional Saturday afternoon or as much as 12 hours each week to devote to projects in which the only pay is personal satisfaction and a high sense of involvement. The range and quality of the SSC's activities are a reflection of the kinds of imaginative achievers who attend the Institute.

Tutoring Plus is undoubtedly SSC's brightest star. Now in its third year, the program recently was expanded under a grant from the U.S. Office of Education which will be administered by the Alliance of Cambridge Settlement Houses.

The grant will make it possible to furnish a hundred tutors to troubled Cambridge teenagers. Though the program is now manned by students from several area colleges, it originated with a group of SSC members who worked with the Cambridge Neighborhood House, the Alliance, and a group of Cambridge parents to bring it about. Most of the tutors still come from M.I.T.

But Tutoring Plus is more than just a tutoring program. Tutors form a close big-brother relationship with their

tutees—the "plus" factor. When there is no father at home, a tutor may provide the main constructive male influence in a boy's life. Tutoring Plus is credited with keeping many youths from becoming dropouts in an area plagued by low incomes, inadequate cultural and recreational facilities, and a dropout rate that has been running about 50 per cent. A couple of tutors have managed to persuade their tutees to enter college. One even loaned his tutee money for the application fee.

Tutoring Plus is only one of several tutoring programs for SSC. In Boston's Roxbury section SSC and the Technology Catholic Club are cooperating with St. Joseph's Parish to provide tutors for Negro youngsters. One request for tutoring came from a 13-year old who still reads at a second-grade level. In addition to the usual handicaps besetting the poor, residents of this area must deal with the uncertainties of relocation, for this area is to be included in the city's slum clearance program.

In a related project, ten M.I.T. students are teaching classes in remedial arithmetic one evening a week for students in Roxbury. In another section of Roxbury SSC volunteers are working with professional social workers in an experimental effort to encourage adults to organize to solve some of their own problems. Neighborhoods in which families are grouped around stairwells lack cohesiveness, a major barrier to efforts at self-help. One of the initial goals of the volunteers is to reorganize the nearly defunct neighborhood tenants' association.

In a joint project with Harvard, SSC volunteers are tutoring high school dropouts at Neighborhood Youth Corps centers in Cambridge. Under this wing of the federal government's poverty program, a dozen M.I.T. students and a like number from Harvard are teaching remedial reading and similar work to pupils who range in age from 16 to 20.

The SSC also furnishes youth clubs with leaders for groups in science, sports, music, art, or almost anything else that seems to interest the young members. Most of these programs center around the neighborhood settlement houses. SSC also recruits volunteers to serve as swim instructors, referees, and athletic coaches in neighborhood youth programs.

One of the SSC's most recent additions is a child guidance program, helping the many overloaded child-guidance clinics working in the area with children who are emotionally ill or mentally retarded. "Some of these chil-

(Continued on page 56)

Kim D. Collins, '66, spent the summer as a student counselor in the 1966 Science Day Camp. His duties included this kind of help to two campers in a Physics Department laboratory.

PHOTO: OWEN D. FRANKEN, '68

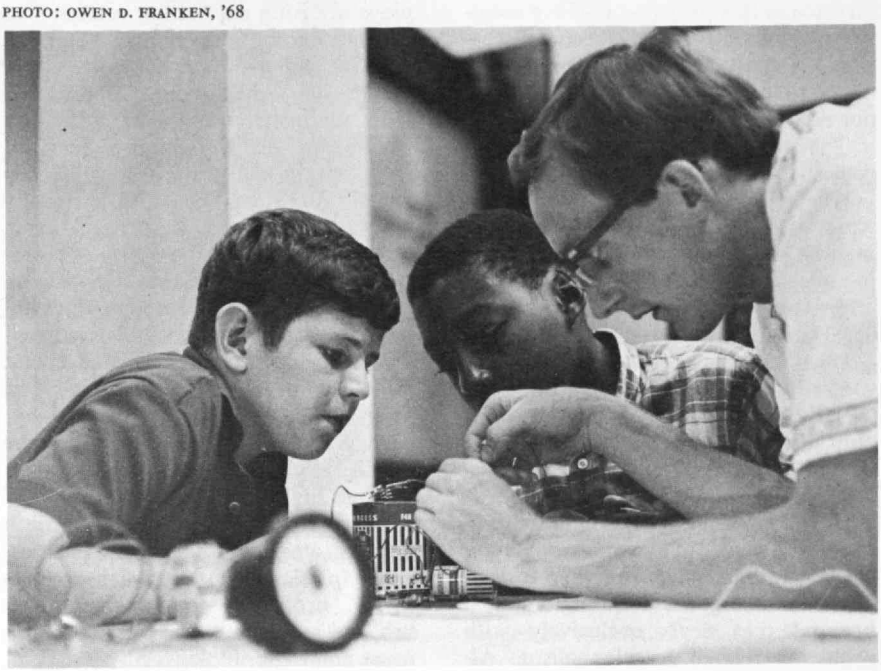


PHOTO: JOHN TORODE, '66

Model building combines fun and skill, and M.I.T. students William M. Parks, '67 (left), and Irving H. Thomae, '62, have an enthusiastic group of South End youngsters at work.

Those Who Need Help

(Continued from page 55)

dren are difficult cases even for the professional case workers," comments Arthur C. Neuendorffer, '67, the SSC director of this project. "We help mainly by providing friendship and recreational activity. Some of them find it easier to identify with a person they do not associate directly with the clinic."

The practice of using volunteers in general hospitals originated in Boston nearly 50 years ago. Much of their work is menial and unglamorous—making beds, feeding patients, answering telephones, emptying bed pans; for a few there can be more responsibility. Twelve hours per week without pay is a considerable sacrifice for an overworked student; but, as Bruce Nappi, '69, the SSC project director, points out, "People who really want to, manage to find the time."

They do: more than a dozen M.I.T. students work regularly in the laboratories and wards of Boston City Hospital, and others work in other institutions, including the Washingtonian, a hospital that deals exclusively with problems related to alcoholism. Although the work has a special appeal for premedical students, the volunteers are by no means all in this group. Boston City Hospital also trains student volunteers for jobs requiring some technical skill—operating the hospital's electrocardiograph, for example, or working in research, analytical or X-ray laboratories.

An especially exciting SSC project this year is at Boston State Hospital for the mentally ill, where an imaginative experiment is underway. The hospital chose 120 "terminal" patients who had been in the hospital at least 20 years for a concentrated program of extraordinary therapy designed to involve the patients once again with the world outside. The amazing result was that within a relatively short time 90 of these so-called "incurables" were released. The moral was clear: the hospital's sorest need was for personnel.

Can student volunteers meet this need? This year groups of students are trying to do so. Each student group adopts a single ward, where the students plan and organize recreational programs, set up discussion groups, and work in a variety of ways, limited only by their own imaginations, to involve their patients in the kind of everyday activities the rest of us take for granted. The object is to kindle in these people a wish to be cured and to rejoin society. One hospital administrator, who admits that little is known about dealing with such patients, believes that an imaginative and enthusiastic group of students may succeed where professional workers have failed.

Summer provides special opportunities, among them the Science Day Camp, a program in which the SSC plays a strong supporting role. It was organized jointly a year and a half ago by SSC and the *ad hoc* faculty Committee on Educational Opportunity. Now administered by an Institute-wide Committee on Community Services, the program has both a student (Richard F. Adelstein, '68) and a Faculty (Warren M. Brodey, Research Affiliate in the Research Laboratory of Electronics) director. Science Day Camp (which is continued through the winter as a Saturday school) is designed to encourage educational achievement in boys from low-income families. The program enrolls from 30 to 40 boys each year who are about to enter the eighth grade; they remain members through high school graduation.

Last summer 70 eighth and ninth graders attended the eight-week session. In classrooms and laboratories M.I.T. professors taught them such subjects as communications, measurement and logic, biology, physics, computer science, and urban affairs (a study focussing on their own community problems). Classes are punctuated with swim periods and sports. The SCC assigns one undergraduate counselor to each group of four to six boys, and he attends classes, answers many of their questions, and acts as a link between the camp and the boys' families. One day a week is devoted to field trips where the campers find out how a newspaper or bottling plant operates or learn about farm animals or wildlife sanctuaries.

The association with an M.I.T. undergraduate, according to Dr. Brodey, helps make the possibility of going to college more real to these boys for whom the idea was previously foreign and remote.

Although the Social Service Committee functions as an umbrella and rallying point for most student service projects, it is not the only campus organization so involved. Alpha Phi Omega and its sister organization Alpha Chi Delta (national service fraternity and sorority) have active chapters at M.I.T. Alpha Phi Omega conducts a ten-week swimming and lifesaving program for about 100 Cambridge Boy Scouts each year in the Alumni Pool. Alpha Chi Delta holds regular Christmas and Hallowe'en parties at a home for mentally retarded children in Boston, and M.I.T. co-eds are making recordings of technical books for the blind.

(Concluded on page 62)

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grant is particularly gratifying, for it enables M.I.T. to apply the funds to help finance a major program currently under way to strengthen research and teaching in the field of chemistry."

Standard Oil (Indiana) Foundation, whose chairman, John E. Swearington, joined with Dr. Killian in the announcement, is supported by Standard Oil Company (Indiana). The gift to M.I.T. is one of about 80 unrestricted grants being made in 1966 to outstanding private institutions of higher learning by three foundations supported by Indiana Standard and its subsidiaries. The three have contributed over $9 million in support of education over the past 14 years, including grants now amounting to about $600,000 to M.I.T.

2,000 Students in 20 Sports

The M.I.T. community takes all its intramural sports seriously, but touch football gets top billing. This year's champions were Sigma Alpha Epsilon, and to reach this exalted place they came through a ladder of 55 intramural touch football teams.

This fall over 900 players were out for intramural football, and there were hundreds of spectators—often more than watched intercollegiate competitions in other sports on other parts of Briggs Field at the same time.

Last year over 2,000 students took part in the 20 sports in the intramural program.

PHOTOS: JEFFREY M. REYNOLDS, '69, FROM THE TECH

No football at M.I.T.? This is Fred S. Souk, '67, carrying the ball for Beta Theta Pi, one of 55 intramural touch football teams entered in the fall tournament; the defense man upended by Sigma Alpha Epsilon is D. I. Keith Davies, '69. Meanwhile, 143 runners (left) crowded the start of the annual intramural cross country meet.

The whole activity is organized by undergraduates for themselves, and the man in charge is M. William Dix, '67, a metallurgy major from Casper, Wyoming. The emphasis, he says, is "to provide athletic competition for the M.I.T. community on a more informal level than intercollegiate sports.

"We want to get sports to the entire community, realizing that just about everyone wants to participate in sports but doesn't always have the time and talent for intercollegiate athletics."

Mr. Dix is a vice president of the M.I.T. Athletic Association; under him is an efficient Intramural Council that sees to the grass-roots operation of intramurals. A manager for each of the 20 sports is responsible for the assignment of officials, compilation of scores, and the day-to-day problems and protests.

Next to touch football, the biggest intramural drawing cards are softball, basketball, and volleyball. There is also competition in hockey, bowling, badminton, wrestling, squash, rifle, swimming, track, sailing, and golf. Last year, Mr. Dix himself was instrumental in adding billiards, cycling, and water polo to the list.

Girls are beginning to get into the act, too, by fielding intramural tennis and volleyball teams.

Purchasing Council

Saving money is of interest to everyone and to Robert E. Jordan, 3d, '58, President of the I.F.C. in 1957-58, the topic was of sufficient interest to inspire his senior thesis, a proposal for mass purchasing. Jordan's idea was a simple one: a centralized purchasing activity which would buy basic items needed by all fraternities in such quantity so as to command low prices. The goods could then be resold to the fraternities at the reduced prices.

But Jordan's proposal was, in a sense, putting the cart before the horse, because eight years ago M.I.T. fraternities were more prepared to compete than cooperate. Last year, the program finally became an integral part of the I.F.C.'s work with the creation of an I.F.C. Purchasing Council. The chairman, James Edgerton, '66, wisely decided to build up a few basic activities before the great elaboration suggested in Jordan's thesis. So many specific suggestions from the thesis were discarded as impractical and new practices were initiated.

Once reorganized, the P.M.C., consisting of one representative from each fraternity, set up a warehouse from which to distribute soap, paper products, wax, and light bulbs, articles which no house can do without, at great discounts. Saturday morning is the time usually designated for house representatives to appear at the warehouse to do their weekly shopping. The savings are well worth the trip. This year's P.M.C. chairman, Peter R. Denton, '67, of Kappa Sigma, says

The professional skeptics: representatives of some of M.I.T.'s 28 fraternities taste-test canned goods before the I.F.C. Purchasing Council selects one brand to stock in quantity and resell to the houses at a discount.

PHOTO: GUS P. KAYAFAS, '69

Clambake! 1300 lobsters, 800 chickens, 90 dozen ears of corn, and 60 gallons of cole slaw—all consumed by M.I.T. dormitory residents when the Dining Service moved dinner to Briggs Field for a "special" this fall.

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that the warehouse alone does $10,000 worth of business on $15,000 worth of goods, at savings of $5,000 to the fraternities as a group, or between $100 and $200 per house per year.

Now the P.M.C. has also entered food purchasing on behalf of all the fraternities. This fall it worked this way: the PMC. held a "tasting party" in the I.F.C. headquarters in the Student Center. Five canned-goods dealers sent samples from which P.M.C. members removed the labels. Competing canned goods were placed together, and house representatives on the P.M.C. were asked to judge appearance, color, and size as well as taste. Each member then voted for the can he thought the best. In the end the votes were compared with the dealers' bids and the P.M.C. arranged for quantity purchases of the chosen product. No fraternity is obliged to buy, but those that do benefit from the contract saving. Only a few products are on a compulsory basis—where volume and perishability are an issue in distribution, for example milk, bread, and fuel. With a large guaranteed volume, competing dealers quote lower prices.

Town and Gown

"The most perplexing and urgent issue facing Cambridge," said Howard W. Johnson, President of M.I.T., at the 1966 annual meeting of the Cambridge Chamber of Commerce on October 27, "is the city's need to increase and improve the inventory of housing for families of low and moderate income."

And the universities, having exerted "an uncommon pressure on the present housing resources," have a "special obligation" to help, he said.

They are already doing so through the Cambridge Corporation, a nonprofit, privately supported development corporation whose first mission is to assist in developing housing. Half of the Corporation's $1 million revolving fund has been pledged by M.I.T. and Harvard, and the other half is now being assembled from private contributions of Cambridge business and industry.

Meanwhile, M.I.T. has become the second largest source of tax revenue for the city, President Johnson told the Chamber of Commerce members. The yield to the city in 1965 was $922,000; this included taxes on M.I.T.-owned income property, taxes paid by tenants of income property, taxes on the Technology Square development in which the Institute shares a capital interest, and $223,000 that M.I.T. "paid voluntarily in lieu of taxes" on tax-exempt properties used for educational purposes.

"Both Harvard and M.I.T. have been making such voluntary payments to the city for nearly 40 years," President Johnson pointed out, "and insofar as I know, these agreements are unique in this country."

Fall Sports Highlights

The fall sports season produced three stars at M.I.T.:

Gerald P. Banner, '68, came up with the biggest news in M.I.T. golf since 1962 by taking medalist honors in the E.C.A.C. Championship qualifying round in Burlington, Vt., in October. Unfortunately, he was off the pace two weeks later in Bethpage, L.I., at the E.C.A.C. tourney.

Stanley M. Kozubik, '69, who established himself as a powerful runner in his first year at M.I.T., found some of his hottest cross-country competition in his own front yard, and Coach Arthur E. Farnham, Jr., calls Ben T. Wilson, '70, "without a doubt the best high school runner ever to attend M.I.T." The Boston *Globe* says Wilson wants to run a 4:00 mile before he finishes at the Institute; he'll shoot for a 4:10 mile this spring and get it down to 4:05 by the start of his senior year.

The soccer team had a so-so season, midway in which came the team's

biggest upset since 1963 when the varsity blanked Springfield College, 1-0, the first victory over Springfield since the series began in 1921.

Winter Sports

The first turn-outs for winter-season sports began at M.I.T. in October, and 19 teams will be in full action by December 1. Basketball will have top billing; the varsity had a record-breaking 18-8 season last year, seven lettermen are back, and 6′6″ Robert M. Hardt, '67, who was out the last 16 games last season, will start as center this winter.

Intercollegiate varsity home contests in December will include Wesleyan December 3, R.P.I. December 10, and Dartmouth December 17 in basketball; Polytechnic Institute of Brooklyn December 3, Harvard December 7, and Norwich December 16 in fencing; University of Massachusetts December 3, Holy Cross December 5, and Worcester Polytechnic Institute December 10 in hockey; Army December 3 in pistol; Army December 9 and McGill December 16 in squash; Tufts December 6 in swimming; Bates December 10 in track; and Williams December 10 and Harvard December 16 in wrestling.

Away-from-home appearances in December will include: at Trinity, basketball December 1; at Lowell Technological Institute, basketball and hockey December 8; at Brandeis, basketball December 6 and fencing December 10; at Bowdoin, swimming and indoor track December 3 and basketball December 14; at Southeastern Massachusetts Technological Institute, fencing December 14; at the Merchant Marine Academy, pistol December 10; at Dartmouth, squash December 3, at Rensselaer Polytechnic Institute, swimming December 10; and the University of Connecticut, swimming December 13.

The varsity wrestlers will be at the Coast Guard Academy for an invitational meet on December 2-3; the basketball team will be in the Worcester Junior Chamber of Commerce tourney at Clark University on December 27-29; and the ski team will be at Franconia College December 27-28 and in the Lyndonville (Vermont) Relays on December 30-31.

For Organic Chemistry

Half of the estate of the late Arthur C. Cope, who was Camille Dreyfus Professor of Chemistry at M.I.T. at the time of his death in June, 1966, has been left to the American Chemical Society. It will be placed in the Arthur C. Cope Memorial Fund for the support of research and education in the field of organic chemistry.

Professor Cope was head of M.I.T.'s Department of Chemistry from 1945 until he assumed the Dreyfus Professorship in 1965. He was serving his seventh term as Chairman of the Board of Directors of the American Chemical Society at the time of his death.

S. S. Kresge: 1867-1966

Sebastian S. Kresge, founder of the S.S. Kresge Company and of the Kresge Foundation, died on October 19 at the age of 99. His foundation's gift of $1.5 million in 1951-55 led to the construction of Kresge Auditorium and the M.I.T. Chapel and thereby to a new environment for education which has special meaning to every member of the Institute community.

Individuals Noteworthy

Robley D. Evans, Professor of Physics, is now President of the Radiation Research Society. In June he received the Silvanus Thompson Medal of the British Institute of Radiology in London and later that same month flew to Cortina d'Ampezzo, Italy, to serve as a senior delegate to the Assembly of the Third International Congress of Radiation Research.

Ali Javan, Professor of Physics, received a Fannie and John Hertz Foundation Award from President Lyndon Johnson in recognition of his work in developing the first continuous-wave gas laser.

Edwin H. Land, Visiting Institute Professor who is President and Director of Research of Polaroid Corporation, received the 1966 Albert A. Michelson Award from Case Institute of Technology for his "pioneering work in optical research . . . the design of the Land Camera, his contributions to color vision, color photography, three-dimensional motion pictures and . . . innovations in basic and applied optics."

Charles H. Townes, Institute Professor and Professor of Physics, received an Alumni Distinguished Service Award from the California Institute of Technology in recognition of his work in physics. He has also been elected a Director of the Perkin Elmer Corp. **H. Guyford Stever,** President of Carnegie Institute of Technology and former M.I.T. professor, received a similar alumni award for his contributions to engineering.

Franklin T. Towle, '08, and **Ralph H. Davis, '31,** are Executive Vice-presidents of Fairfield & Ellis, Inc.

Augustus B. Kinzel, '21, is Chairman of the Executive Committee of System Development Corp., and **David A. Shepard, '26,** is Vice-chairman of the Board. Dr. Kinzel is President and Chief Executive Officer of the Salk Institute for Biological Studies. Mr. Shepard was Executive Vice-president and Director of Standard Oil Company

before he retired in 1966.

C. George Dandrow, '22, consultant on industrial marketing, was awarded a medallion for his service as Vice-chairman and featured speaker at the Building Products Executive Conference in 1955 and 1957.

For his work on radiant heat transmission, **Hoyt C. Hottel, '24,** Director of the Fuels Research Laboratory at M.I.T., holds the Max Jacob Memorial Award by the American Society of Mechanical Engineers and the American Institute of Chemical Engineering.

Samuel Shulits, '24, head of the Fluid Mechanics Program and the Hydraulics Laboratory at Pennsylvania State University, was awarded the Karl Emil Hilgard Hydraulic Prize of the American Society of Civil Engineers.

The Vincent Bendix Award for "outstanding research contributions" was given by the American Society of Mechanical Engineers to **Charles S. Draper, '26,** Professor of Aeronautics and Astronautics and Director of the Instrumentation Laboratory at M.I.T.

J. Robert Bonnar, '27, is now Corporate Director of Purchasing for General Aniline & Film Corporation.

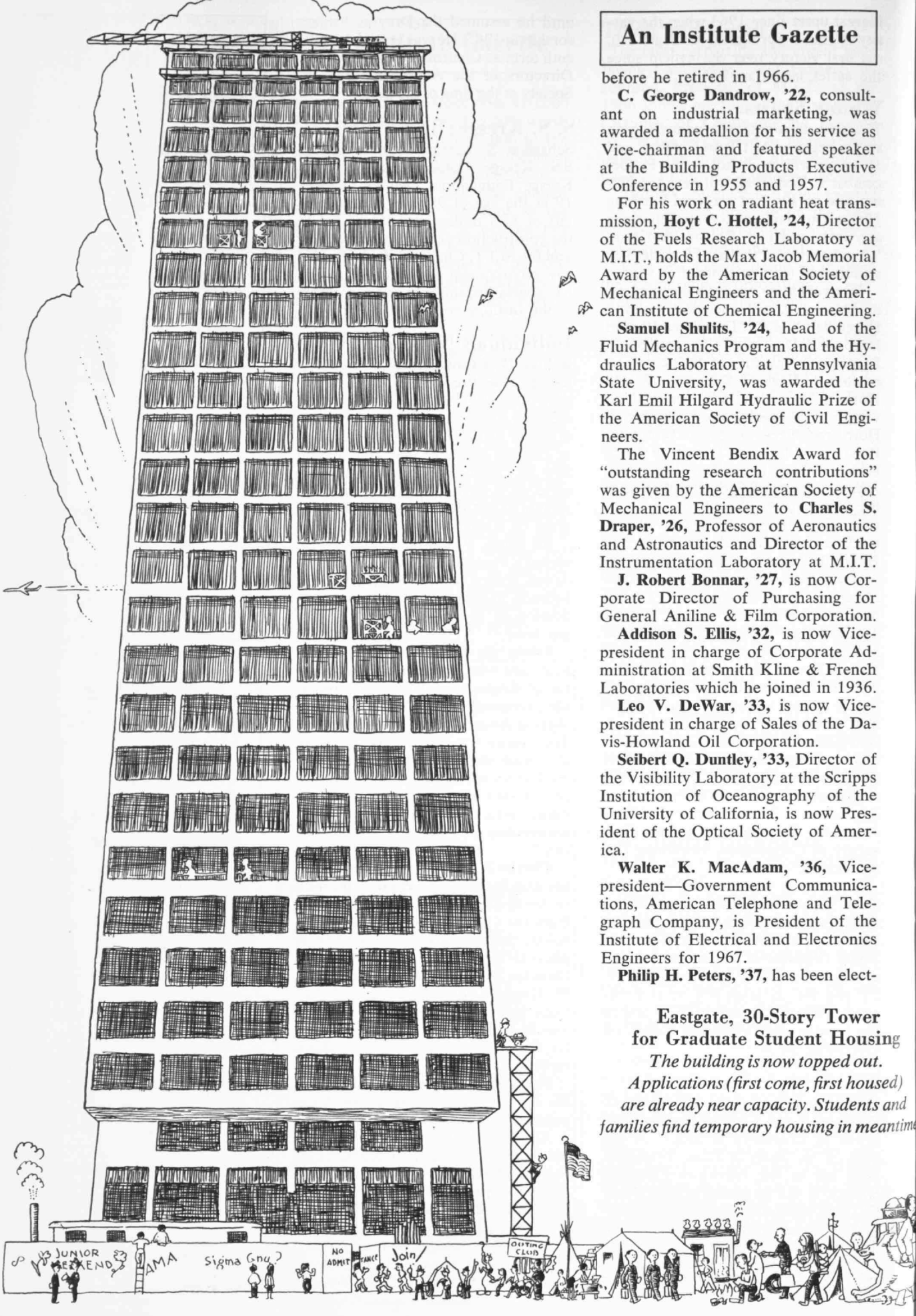
Addison S. Ellis, '32, is now Vice-president in charge of Corporate Administration at Smith Kline & French Laboratories which he joined in 1936.

Leo V. DeWar, '33, is now Vice-president in charge of Sales of the Davis-Howland Oil Corporation.

Seibert Q. Duntley, '33, Director of the Visibility Laboratory at the Scripps Institution of Oceanography of the University of California, is now President of the Optical Society of America.

Walter K. MacAdam, '36, Vice-president—Government Communications, American Telephone and Telegraph Company, is President of the Institute of Electrical and Electronics Engineers for 1967.

Philip H. Peters, '37, has been elect-



Eastgate, 30-Story Tower for Graduate Student Housing

The building is now topped out. Applications (first come, first housed) are already near capacity. Students and families find temporary housing in meantime

ed Senior Vice-president of the John Hancock Mutual Life Insurance Co.

Irving W. Tourtellot, '37, is now Southern District Manager for Charles T. Main, Inc.

Lloyd Bergeson, '38, has been elected Chairman of the Board of Directors and Chief Executive Officer of Vacuum Barrier Corporation. The company's founder and President is **Thornton Stearns, '44.**

Frank B. Gorman, '39, is head of a research group established by CBS Laboratories to investigate new aspects of oceanography.

Dr. **Richmond W. Smith, Jr., '39,** is now Chairman of the Department of Medicine at Henry Ford Hospital, Detroit.

Thomas F. Creamer, '40, is Senior Vice-president, Lower Manhattan District, First National City Bank.

Harry K. Sedgwick, '40, is now the Director of Engineering for the Dictaphone Corporation.

Ripon College awarded **Frederick T. Haddock, Jr., '41,** Professor of Astronomy and Electrical Engineering at the University of Michigan, an honorary doctor of science degree.

Kenneth G. McKay, '41, has been named Vice-president of Engineering for American Telephone and Telegraph Company.

Albert C. Zettlemoyer, '41, who has served Lehigh University in research and teaching for 25 years, is now Vice-president for Research.

Fred A. Mudgett, '43, is now Vice-president of the Hertz Corporation and General Manager of Hertz International, Ltd.

S. James Spitz, Jr., '43, is now Executive Vice-president of Tenneco Chemicals, Inc.

William R. Thurston, Jr., '43, formerly Marketing Research Manager for General Radio Company, is now Vice-president for Planning.

Caleb S. Taft, '44, is Vice-president and Executive Assistant of the American Metal Products Company.

Mac E. Van Valkenburg, '46, is now Professor and Chairman of the Department of Electrical Engineering at Princeton University.

Samuel Shulits, '24

J. R. Bonnar, '27

A. S. Ellis, '32

I. W. Tourtellot, '37

K. G. McKay, '41

A. C. Zettlemoyer

Henry E. Viola, '46, is the new Vice-president of Reeves S.p.A., Milan.

Benjamin Z. Ranan, '47, is now Manager of the Diode and Special Products Division of Transitron Electronic Corporation.

Bascom W. Birmingham, '48, has been chosen a Science and Technology Fellow by the U.S. Department of Commerce cooperating with the Brookings Institute, and he will spend this year in a special fellowship program at Brookings.

Gerhardt C. Clementson, '48, is now Manager in charge of Technical Operations for Falcon Research and Development Co.

Leo J. Martin, '48, is Manager of the Chem Foam Division of General Box Co.

Glenn W. Stagg, '48, is head of American Electric Power Service Corporation's Engineering Analysis and Computer Division as well as serving Purdue University as Visiting Professor of Computer Techniques.

Earl W. Eames, Jr., '49, is Vice-president in charge of Operations for the Council for International Progress in Management.

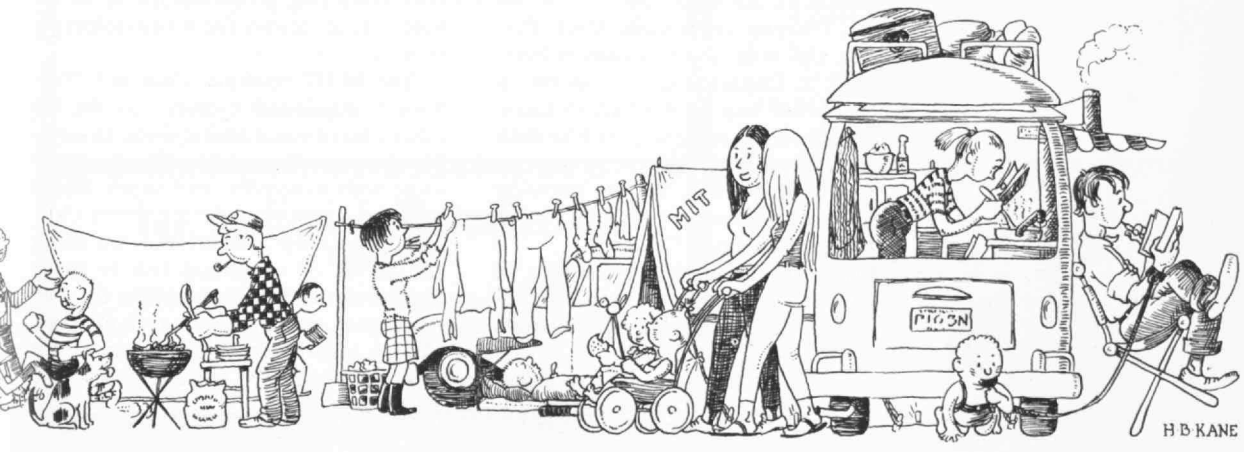
Joe R. Foote, '49, is Professor of Applied Mathematics at the University of Missouri at Rolla.

Robert B. Newman, '49, accepted for Bolt Beranek and Newman Inc., architectural acoustics firm, the Frank P. Brown Medal for discoveries in building industries from the Franklin Institute. **Robert N. Noyce, '53,** Group Vice-president, Semiconductor and Instrumentation Division, Fairchild Camera and Instrument Corp., received the Stuart Ballantine Medal for "outstanding achievement in communications and reconnaissance employing electromagnetic radiation."

Parker Painter, Jr., '49, is now head of the Electronics Division of General Dynamics.

Norton Belknap, '50, is now Managing Director and Chief Executive Officer at Esso Standard Oil (Australia) Ltd.

Thomas R. Eggert, '50, is Vice-president in charge of Sales for American Steel Foundries, a unit of AMSTED Industries.



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Vinson R. Simpson, Jr., '50, is Managing Director of Trane, Ltd., Edinburgh.

Halcon International, Inc., has announced that **Theodore W. Stein, '51,** is now Assistant Vice-president and Director of Development; and **Joseph L. Russell, '55,** is Vice-president in charge of Research and Development.

John R. Dixon, '52, is head of the Department of Mechanical Engineering at the University of Massachusetts.

Richard A. Hickland, '52, is now Executive Vice-president in charge of Operations of the Briggs Manufacturing Company.

Phillip H. Smith, '52, is Vice-president—Development and Procedures, Copperweld Steel Company.

Case Institute of Technology has given its Charles J. Strosacker Teaching Award to **Charles K. Taft, '53,** Associate Professor of Mechanical Engineering and member of the Engineering Design Center Staff. The citation reads in part "your pioneering efforts . . . encouraged your students to develop their creative talents . . . (and) reflect great credit upon you as a fine and talented teacher."

Robert T. Wallace, '53, is now Vice-president—New Product Planning and Development, Owens-Illinois, Inc.

Thornton A. Wilson, '53, has been named to the newly-created post of Executive Vice-president of the Boeing Company.

John Blair, '54, is now Corporate Director of Research and Scientific Liaison at the Raytheon Company.

Eugene M. Moore, '54, is the new Vice-president in charge of Corporate Planning and Development for the Bullard Company.

Paul D. Spreiregen, '54, is now Program Director of Architecture and Design for the National Endowment for the Arts.

Malcolm R. Blotner, '56, is now Manager of Operations Analysis for Lever Brothers.

Martin D. Robbins, '56, is now Assistant Director for Special Merit Programs, Office of State Technical Services, U. S. Department of Commerce. The position was established to facilitate the receipt of new scientific findings by local enterprises.

Theron E. Bastian, '57, is Controller of the Electro Minerals Division of The Carborundum Co.

Robert P. Breading, '57, is one of three newly-named partners of Harbeson Hough Livingston & Larson, architects of Philadelphia.

Roy F. Thorpe, '58, is Vice-president of the Falcon Alarm Company.

C. Frederick W. Ekman, '61, is Vice-president in charge of Research and Development at Carter's Ink Co.

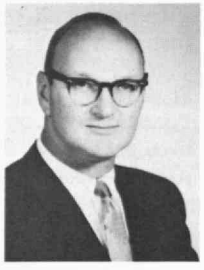
Arnold H. Singal, '63, is now Vice-president in charge of Research, Planning, and Development for Federal Distillers, Inc.

Jack W. Hendrix, '65, Vice-president of Brown Engineering Company, has been appointed head of its newly formed Equipment Systems Group.

F. A. Mudgett, '43

S. J. Spitz, '43

W. R. Thurston, '43



B. Z. Ranan, '47

R. A. Hickland, '52

M. D. Robbins, '56

C. F. Ekman, '61

J. W. Hendrix, '65

Those Who Need Help

(Concluded from page 56)

Another important link between M.I.T. and its environment is provided by the Technology Community Association, under whose sponsorship some 40 M.I.T. students teach more than 800 Boston-area high school students in summer courses in calculus, computer programming, astronomy, circuit theory, linguistics, and other advanced subjects. Their pupils receive no credit and pay no fees, but for these bright, ambitious teenagers the work represents a significant head start on college. For their instructors it represents teaching experience and added incentive to master their course material.

One novel social service project was created when Irving H. Thomae, '62, a graduate student in electrical engineering, decided that his hobby of building model trains could provide a fruitful pastime for underprivileged youngsters. Model building provides a special kind of recreation, and it helps develop useful skills—carpentry, circuit wiring, painting, and even architecture and planning for miniature cities along the railroad route.

Thomae persuaded one church to offer money, another to offer a room. Several area manufacturers donated materials, and fellow members of the Tech Model Railroad Club volunteered their time. Although the project is hampered by a chronic shortage of funds, a loyal group of South End youngsters, under the watchful eyes of the M.I.T. railroaders, is carefully laying out tracks, spiking miniature ties, and assembling the cars that will run on them. The young railroaders are now collecting green stamps in an effort to raise money for a new soldering iron.

The M.I.T. campus does not "boil with impassioned cliques" as do the campuses of some universities. Invariably there are those who will ride out to joust with windmills, and surely this is a healthy sign, for society needs challengers to keep it alert. But too often the ability of a militant few to make spectacular headlines obscures the fact that many more quietly roll up their sleeves and address themselves to the important work of helping those who need their help.

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Bill sparked his school football team... now he calls signals on a GM assembly line.

Bill Geshwiler is a Methods Engineer, quarterback of the engine assembly line for Buick at Flint, Michigan.

He works with miniature men and machines on a three-dimensional board, an actual facsimile of the plant. By moving, changing, arranging and rearranging, he coordinates and balances men and equipment for peak efficiency and productivity. He evens the individual work load so that a smooth, orderly production flow is maintained all the way along the assembly line.

Bill has always been a quarterback—in grade school and high school at Beech Grove, Indiana, near Indianapolis. The fact is, he made the All-State football team in 1954. Passing up scholarships at two universities and an appointment to a service academy, he decided instead on the General Motors Institute in Flint, and was graduated with an engineering degree.

He's the kind that could make any team, but we're glad Bill Geshwiler is in the General Motor's lineup.

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MARK OF EXCELLENCE

Class News

'93

Harry M. Latham, who died this summer, was a retired consulting engineer of Crompton & Knowles Corporation in Worcester, Mass. He became chief engineer for them in 1916 and retired in 1947. He was a graduate of Stoneham High School and was graduated from the Massachusetts Institute of Technology in 1893 as a mechanical engineer. From 1899 to 1912 he was employed in the engineering department of the American Steel & Wire Division, U.S. Steel Corporation. He later became district engineer for the North Works of the company. He was a former member the American Society of Mechanical Engineers, Worcester Engineering Society, The Winter Club, later known as the Worcester Club, Tatnuck Country Club, Economic Club, Unitarian Laymen's League and the Worcester Historical Society.—Newspaper clipping submitted by **H. L. Robinson,** 34 Laurelwood Road, Holden, Mass.

'94

"I note that '94 has been out of Class News for a long time, a natural following of getting into the mid-ninety age. We don't get into any activities to make news. As for myself, a bit of back yard gardening in the summer and walks around the block for exercise."—**Fred C. Baker,** 8 Grace Court, Gardner, Mass. . . . Dr. **Charles G. Abbot,** fifth secretary of the Smithsonian Institution, was one of a 55-member Selections Committee chosen to select items to be preserved in a time capsule at the site of the Robert Hutchings Goddard Library at Clark University, Worcester, Mass. The capsule, designed to be raised in the year 2466 A.D., will contain close to 100 items for future generations, including Dr. Abbot's book, *Adventures in the World of Science.*—Public Relations Office, Clark University, Worcester, Mass. 01610. . . . **John P. Story, Jr.,** who died April 3, was former president of the Story Real Estate Company in Washington, D.C. He began his career in real estate in the late 1890's and retired in 1963.—*Washington Star,* Washington, D.C. . . . **Edward I. Marvell,** designer and architect, died May 5 in Fall River, Mass. He designed many public and commercial buildings in Fall River including wings of the Truesdale Hospital and the Union Hospital nurses residence. He was also trustee and designer of the Stevens Home for Boys in Swansea.—*Boston Traveler,* Boston, Mass.

'95

Today there are five of us, out of our freshman class of over 400, in New England, Florida, Texas, and California, able to be out and about. Accept our best wishes to you all. Let us hear from you.—**Andrew D. Fuller,** Secretary, 1284 Beacon St., Brookline, Mass. 02146

'96

George Harkness left for his usual winter visit to Florida in October. The Secretary spent a very pleasant hour with him at his home in Dorchester after attending the Conference of M.I.T. Officers, talking over the construction of the subway and the West Boston Bridge; George has been retired for several years as Bridge Engineer for Massachusetts' Department of Public Works. . . . **Charles G. Hyde** sent a card from his encampment at Bohemian Grove in California. He said there were several prominent Tech men there. Later he sent a letter that told of his visit for two weeks with his daughter in Berkeley and of another fortnight visit with his youngest daughter in Tiburon, Marin County, across the San Francisco Bay. . . . The Secretary accepted an invitation to attend the Inauguration of Howard W. Johnson as the Twelfth President of The Massachusetts Institute of Technology on the 7th of October. The procession of representatives from universities here and abroad in their varied colored robes was inspiring. The ceremonies were held in the spacious cage named Rockwell in memory of a most devoted member of '96.—**James M. Driscoll,** Secretary, 129 Walnut Street, Brookline, Mass. 02146

'99

A note of the death of **Edwin B. Mead, IV,** on June 30, 1966, appeared in the November Review. Edwin was born in Erie, Pa., on June 30, 1875, the son of Dr. and Mrs. George J. Mead. He married Gertrude Henry of Amherst, Mass., in 1902. He practiced architecture in Boston until he became one of a group of 17 engineers and architects who helped rebuild San Francisco after the earthquake in 1906. He lived in Berkeley for many years. In 1938 he went to San Diego and worked there until he retired at 80. After his wife's death he lived in a retirement village in Riverside where he was active in television and radio and gave talks and wrote on many subjects. He was a stamp collector and was well and alert until the unfortunate fracture of his hip and pneumonia terminated a useful and interesting life. He is survived by a daughter, Mrs. M. D. Bullitt in Riverside. . . . **Alfred W. Lombard** is receiving special care in the Hancock House Nursing Home in Lexington, Mass. Mrs. Lombard is with her daughter at 120 Nyac Ave., Pelham, New York, and her son lives in Lexington. . . . After admiring the beautiful setting for the inauguration of our new president, Mr. Howard W. Johnson, I examined the program, and as I read the list of the past presidents I realized that I had been associated with ten of them from General Francis A. Walker to date and that Professor John D. Runkle had an active influence in my life with his analytic geometry. For four years before entering the Institute I had been at the famous old Chauncy Hall School (instituted in 1828) in Copley Square in the next block. My conversation classes in French and German used to meet in the home of M.I.T. people on Newbury St., right back of Walker. I attended many Lowell Lectures in Huntington Hall in Rogers and took some courses in the Lowell Institute conducted by members of the faculty of M.I.T. So I have been interested in the wonderful developments at M.I.T. that have taken place in the last 75 years.—**Percy W. Witherell,** Secretary, 1162 West St., Wrentham, Mass.

'00

The Rev. **Henry M. Brock** died Sept. 8, 1966, at the age of 90 years. His career has been outlined in these Class Notes several times over the years, the latest being a full column story in the January 1961 Review. Probably few of the members of the class have preserved that number so a brief résumé of that article will be given herewith. Born in South Boston, Henry attended schools in Roxbury and Boston College. He joined us at M.I.T. in our sophomore year and graduated in 1900 from the Course in physics. He then pursued his ambition to become a priest by further study in Frederick, Md., Holy Cross College and in Lyons, France, and entered the priesthood about 1922. He taught mathematics and physics in Boston College and Woodstock College in Maryland. After several other assignments he became Professor of Physics and Astronomy at Weston College in 1943 and remained there in active service until 1958 when he became Professor Emeritus. The death of Father Brock leaves 28 names on our class roster. Of these 19, or 68%, are M.I.T. graduates. The greatest number of names ever recorded on our list was 423, of which 199 were graduates. Thus it appears that 9.6% of the graduates are living while

Happy Birthday

In December three alumni will reach the age of 90, seven will reach 85, and twelve will reach 80.

December, 1876—PHILIP BURGESS, '99, on the 1st; HOWARD I. WOOD, '01, on the 2nd; ADOLF E. PLACE, '03, on the 21st.

December, 1881—ROBERT W. SEYMS, '06, on the 2nd; PERCY G. HILL, '05, on the 8th; FRANK H. LANGWORTHY, '05, on the 8th; JOHN R. MARSON, '04, on the 8th; LEYLAND WHIPPLE, '04, on the 9th; E. SYKES GOODWIN, '07, on the 14th; PRINCE S. CROWELL, '05, on the 24th; RALPH E. IRWIN, '09, on the 25th.

December, 1886—ROLANDO A. MARTINEZ, '08, on the 3d; RAYMOND E. DRAKE, '08, on the 4th; HARRY F. RICHARDSON, '08, on the 5th; WILLIAM B. GIVEN, '08, on the 7th; WALTON G. HARRINGTON, '10, on the 8th; HERBERT A. CASSIDY, '08, on the 12th; WARD N. GERE, '12, on the 17th; CLARENCE L. JONES, '10, on the 21st; RUDOLPH BEAVER, 17, on the 22nd; WILLIAM N. DREW, '10, on the 23d; LEWIS D. NISBET, '09, on the 26th; THOMAS S. KILLION, '11, on the 27th.

only 4.2% of the non-graduates have survived. We have no explanation to offer why the graduates seem to live longer than the non-graduates.—**Elbert G. Allen,** Secretary, 11 Richfield Road, West Newton, Mass.

'02

Once again we have to record the death of a classmate—**William Roger Greeley** (Course IV) died in Lexington, Mass., on October 10, 1966. He was born in that town May 12, 1881, and lived there all his life. He was graduated with '02 but remained at the Institute to obtain a master's degree the following June. He started his professional career with R. Clipton Sturgis, a Boston architectural firm. In 1916 he was admitted as a partner into the firm of Kilham & Hopkins, Boston architects. This firm later became Kilham, Hopkins, Greeley and Brodie. They were responsible for the design of many public buildings such as town halls, libraries, churches and schools. Aside from his architectural activities Greeley was very active in community life, professional societies, and especially the Unitarian Church. He was a member of the Lexington town meeting for 62 years, a member of the Lexington Historical Society, and had been president of the Boston Architectural Club, the Massachusetts Federation of Planning Boards, the New England Town Planning Association, the Massachusetts Trustees of Reservations, the Boston Building Congress, and the Boston Society of Architects, the Boston Rotary Club, and the Boston Authors Club. He had served also as chairman of the Governor's Committee on Public Safety. In connection with the Unitarian Church he had been president of the Laymen's League, moderator of the American Unitarian Association and president of the Isles of Shoals Star Island Corporation. Greeley leaves two sons, Dr. Dana McLean Greeley, long associated with the Arlington St. Church and now president of the Unitarian-Universalist Association of North America, and Professor Roland B. Greeley, Director of Admissions at the Institute; two daughters, Mrs. George (Ellen) Bryant, and Mrs. Anne V. Dutka, all of Lexington; and a brother, Dr. Hugh P. Greeley, of Madison, Wis., and a sister, Mrs. Dorothea Booth of Newton. These Notes are being typed on a beautiful October day with a warm but strong breeze taking the leaves from the maple trees and blowing them into long windrows on the street below, and the large mountain ash tree is a mass of scarlet berries making the tree a blaze of beauty. Under these conditions it is hard to picture Christmas, but as it will be December when you read the Notes I wish you all a merry Christmas.—**Burton G. Philbrick,** Secretary, 18 Ocean Ave., Salem, Mass. 01970

'03

Well classmates, now that our class report for the December Review is urgently required, your Secretary views with alarm the absence of any news from you folks, either praiseworthy or otherwise. The lack of news has become tragic to some secretaries and has notably closed their column. However, I am still assured that a wealth of interesting accomplishments and even adventure is unavoidably withheld by our well-intentioned group, not realizing its importance to respond and enlarge our class news. Of course the most important event during the past month was the magnificent inauguration of our new President of M.I.T., Howard W. Johnson, on Friday, October 7. As class Secretary, 1903, I was honored with an invitation to the drama, with reserved seat to enjoy fully the entire program amidst an audience of 4000 alumni and 1500 guests that taxed the capacity of the Cage. Our M.I.T. officers and over 225 American and foreign university delegates presented a most colorful background when seated with their resplendent gowns upon the elevated platform about the speaker's rostrum. Dr. Killian was master of ceremonies with Dr. Vannevar Bush. Dr. Killian with customary ease completed the lengthy program in a masterful manner. The inauguration of President Johnson was simple but dramatic, his acceptance of the M.I.T. Charter from Dr. Killian, Chairman of the Corporation, followed by his modest but forceful address of future plans for M.I.T.'s continuous progress as the recognized leader in the world's research of science and its related arts. The exercise closed by an orchestra rendering our National Anthem and singing by the entire audience. The reception for alumni soon followed with luncheon in the DuPont gymnasium, this bringing to a fitting climax the end of a memorable occasion in our M.I.T. history.

Another step in M.I.T. development has been the construction of a six story, $4,300,000 building for the Center for Space Research on Vassar Street off Massachusetts Avenue. It is to be completed by summer of 1967. This Center was established in 1963 and is headed by Professor John V. Harrington, former head of Radio Division at M.I.T.'s Lincoln Laboratory as specialist in space communications systems. The Space Building is made possible under a $3,000,000 facilities grant from Aeronautics and Space Administration and through private gifts totaling $1,000,000 to the M.I.T. Second Century Fund. The remainder is being made available from other M.I.T. funds. Under these grants some 45 predoctoral students are studying at M.I.T. on numerous space related research projects spread through 17 M.I.T. academic departments. The research grant amounts to $1,000,000 a year and has made it possible for M.I.T. to have a vigorous space-related research program in physical engineering, social and life sciences. Many other space research programs are in the process of being brought into the Center for Space Research which increasingly will serve as a campus focal point for interdisciplinary space related research. The new building will be 75 by 200 feet, with a total of 100,000 gross square feet of floor space. Designed by Skidmore, Owings and Merrill of Chicago, it will blend architecturally with other buildings on the M.I.T. North Campus. The same architects developed the master plan for the North Campus, which includes the recently completed Vannevar Bush Building for the M.I.T. Center for Material Science and Engineering, with another building now under construction for the M.I.T. Center for Advanced Engineering Study. The first floor of the new Space Research Building will contain facilities for research on man-vehicle control. The social scientists studying the impact of the space program in all its aspects will be located in the second floor classrooms, and the Administrative offices and facilities will also be placed on the first and second floors. The third floor will house research programs on propulsion, space biology and space nutrition and food science. Laboratories related to fluid dynamics, gas dynamics and data processing, storage and retrieval, will be located on the fourth floor, while the fifth floor will provide facilities for research in geophysics and instrumentation for space experiments. A large astrophysics section, headed by Professor Bruno Rossi, will be located on the sixth floor of the new building. Laboratories for a solid mechanics group interested in space vehicle structures will be in the basement.

Frederic A. Olmsted, X, has a new address, 297 Miller Ave., Mill Valley, Calif. . . . We are obliged to announce the passing of two members from our group, **Ernest J. Cronenbold,** XIII, Dec. 2, 1965, at Wood Ridge, N.J., with no details. However, by a brief note from **Omar Swenson**'s son, John, I am favored with the local newspaper clipping of the passing of Omar Swenson, IV, of 1903. The clipping reads, "Omar Stephen Swenson, 87, died at Concord Hospital September 30, 1966. He was born in Oswego, N.Y., and lived at 174 Center St., Concord, N.H. Swenson attended Dartmouth College and graduated from Massachusetts Institute of Technology in 1903. He was a Veteran of the Spanish-American War, Director of the Mechanics National Bank, Trustee of Merrimack County Savings Bank and a member of the Snowshoe Club. He served on the Board of Aldermen and the Board of Education. Swenson was Treasurer of John Swenson Granite Company with which he had been associated since 1905. He was a member of the St. Paul's Episcopal Church. Omar Swenson leaves his wife, Mary McSweeney Swenson; one daughter, Mrs. William H. Sumner of Wayland, Mass.; one son, John Swenson of Concord; four grandsons; one sister, Mrs. Walter B. Clifford of Boston, one brother, Guy A. Swenson, nieces and nephews. Friends are requested to omit flowers and requested to make donations to Concord Hospital,"—**John J. A. Nolan,** Secretary, 13 Linden Ave., Somerville, Mass., **Augustus H. Eustis,** 131 State St., Boston, Mass.

'05

This is the last opportunity I will have before Christmas to with you all a merry Christmas and a happy New Year. At our age it might be more appropriate to

wish you a healthy 1967. To continue the Chronicles of the last issue, which resulted from my "dues" letter!—**Bill Ball,** III, writes, "Last week **Percy Goodale** was transferred from the Royal Megansett Nursing Home in North Falmouth to a regular hospital, as he has failed to the point where the Nursing Home could no longer take care of him properly. I was notified last February by the United States Power Squadrons that I had successfully passed the Navigator Course, covering celestial navigation and other advanced subjects dealing with navigation. Out of over 60,000 members in the U.S., I believe I am one of the very few who passed the course at age 82. I now have a grade of "N" and a rank of Past District Commander, which represents 16 years of membership in the organization." I hope that at our next reunion we will have a chance to salute our P.D.C. . . . **Prince Crowell,** X, tells of being laid up (middle of August) for a couple of weeks with a temperature (something new for Prince), but that in a few days he would be out on the briny in his racing togs. His gripe was that he missed the S.M.Y.R.A. Championship yacht races. I'll bet he had a son or daughter or grandson in it. . . . We hadn't heard from **Roy Allen** for some time but he tried to make up for lost time. "You ask for a bit of personal news. Considering our "advanced age" we are in pretty good shape. A few infirmities show up occasionally, but we cannot complain. Life is not very exciting, but that is just as well. With 56 days out of 58 with temperatures of 100° and above, we are content to stay in our comfortable apartment or in our air-conditioned car. In June and July we took off for a month or more, and revisited national parks, etc., east and west of the Rockies. As we had seen most of them once or more during the past 15 years, I figured that three rolls of films would be enough to take, but we came back with nine, plus many purchased slides—some 200 Kodachromes altogether. We started out with the Glen Canyon Dam and Lake Powell, then Zion National Park, Bryce, Salt Lake, Jackson Hole and the Grand Tetons, the Yellowstone, Lake Hebgen and the earthquake of 1959 which buried 80 church campers, the old mining town of Virginia City, Montana, Helena and Great Falls, Mont., Glacier National Park, the Hungry Horse Dam on the Flathead River, the Columbia Lakes source of the Columbia River, Radium Hot Springs, Banff, Alberta, and Jasper, British Columbia. Good weather all the way up, except for one day of rain and snow. Coming back we stopped at Lake Louise, went through the Yoho Valley, then up over Rogers Pass, crossed the Columbia at Revelstoke, turned south at Sicamous, past the large Mara Lake and the Shuswap River, and down the Okanagan Valley with its long lake of that name and its almost endless fruit orchards. Took pictures of a couple of the new dams and power plants on the Columbia River. Spent a night in Vancouver, bypassed Portland, Ore., but visited their fine capital city of Salem, spent a night in the attractive city of Bend, Oregon. Ran into rain again at Crater Lake and a bit of snow; we were above the snow banks. Circled Mt. Shasta and Mt. Lassen. Spent two days in Carson City, Nev., and visited Virginia City again. Next Lake Tahoe, then over Tioga Pass to the Yosemite. A couple days on the Monterey Peninsula, a day in our favorite Danish town of Solvang and Monterey, and three in Banning. A very nice and enjoyable trip of a little over 5600 miles, but my advice, stay away from tourist points in the vacation season. For much of the trip, even in California, we were in sight of snow and ice, and when we got home and opened the door of our nice cool car and stepped into 113° temperature, we turned to each other and said, 'Why did we come back?' In April we spent 15 days in California. Aside from the above two trips we have stayed pretty much at home. We have talked a little of going to New York and New England after school begins, but maybe talk will be as far as we get."

Same for **Lloyd Buell:** "Eleanor and I are well—after making allowances for the calendar. Our three children give no cause for anxiety nor yet occupy the headlines. Something from the 'Cotter's Saturday Night' might give the right impression. It is a little early for Gray's 'Elegy in a Country Churchyard'." Somebody please interpret the last paragraph. . . . **Myron Helpern,** V, explaining the weatherman's mistake on Alumni Day adds, "Recently I have been busy attending grandchildren's graduations—Laura Wallace from Skidmore and Ann Wallace from Long Meadow High School. Ann Wallace has been accepted at Brandeis and will enter this fall." She was also accepted in several other top colleges so I take it that she is scholastically inclined, and has heard to that effect from admiring grandparents. "We just moved into our new warehouse at Braintree, which is located in the Campanelli Industrial Center, and we have opened two new stores, one in the Natick Mall and one in the Brockton Mall. These are closed mall developments, which seems to be a development from the old arcade idea but has become very popular all over the country." Good health in 1967, Myron, so you can open some more stores. . . . **Charlie Mayer,** IV, says, "with six granddaughters and one grandson to help educate, I am now in the poverty class by administration standards." Cheer up, Charlie. I hope you will live to help educate great-grandchildren. . . . Another Californian, **C. Robert Adams,** seemingly in good health, reports, "I am 80 years old and crowding 81 so I can't expect to produce

Deceased

MRS. WILLIAM Z. RIPLEY, '93, March 18
JOHN P. STORY, JR., April 13
PROCTOR L. DOUGHERTY, '97, October 15
LOUIS J. RICHARDS, '97, August 30
CHARLES S. GASKILL, '99, October 26, 1965
PAUL LEON PRICE, '00, September 22
WM. ROGER GREELEY, '02, October 10*
ERNEST CRONENBOLD, '03, December 2, 1965
LEROY L. HUNTER, '03
OMAR S. SWENSON, '03, September 30*
ROLAND H. BALLOU, '04, June 13
HARRY G. CHAPIN, '04, September 23
LEWIS NEWELL, '04, October 2
ERNEST GAIL SCHMEISSER, '05, May 3*
ROBERT W. SEYMS, '06, July 1964
JOHN A. SHEPHERD, '06, October 17, 1964
MISS FRANCES P. WEBSTER, '06, September 9
HARRY E. FISHER, '07, August 23
STANLEY B. HALL, '07, October 1964
SUMNER S. PECK, '07, July 3, 1965
HARRY L. BURGESS, '08, August 20
WILLIAM F. GRIMES, '08
ALFRED R. HUNTER, '08, April 30
W. STUART GORDON, '09, August 26
ARTHUR W. LUNN, '09, September 1965
JOSEPH W. PARKER, '09, October 6*
JAMES A. GRANT, '10, September 26
JOHN H. RUCKMAN, '10, August 10
FRED R. BAILEY, '11, January
BURGESS DARROW, '11, September 10
ARTHUR C. PILLSBURY, '11, September 13
ROY D. VAN ALSTINE, '11, September 16
WILLIAM BOYLE, '12, August 19
FRANCIS R. FULLER, '12, October 10
ARNOLD F. RICH, '13, March 4, 1964
EMERY J. THERIAULT, '13, November 20, 1964
LOUIS P. SMITHEY, '15, August 18
FRANK C. PEARSON, '18, January 30
GEORGE W. MCCREERY, '19, October 13
PAUL F. CORBIN, '20, April 12
EDWARD T. VANDEUSEN, '20, September 28*
WILLIAM F. BOUCHER, '21, December 16, 1964
WALTER A. MCKIM, '21, February 26
ERNEST M. Norberg, '21, August 25
GARRETT H. BARNES, '22, February 21
ALEXANDER A. DEDOULOFF, '22, June 1, 1965
FREDERICK H. BUSH, '23, June 8
GEORGE A. JENCKES, '23, September 14
WOODWORTH N. MURRAY, '23, September 11
DALE PURVES, '23, May 12
EDWIN C. SCHATZ, '23, September 6
E. DONALD EARLY, '24, December 18, 1965
JOHN H. HENNINGER, '24, August 29
JAMES F. CUNNIFF, '25, July 27
ROBERT C. WEST, '25, January 17
JOHN J. DRISCOLL, '26, June 10, 1965
OSCAR S. COX, '27, October 4
RALPH B. JOHNSON, '27, September 5*
ELWOOD J. UMBENHAUER, '27, July 11
H. BOWEN SMITH, '28, January 30
W. MORGAN SWINGLE, '28, August 12
LEONARD D. LAWRENCE, '29, September 26
FRANK C. STRATTON, '29, January 1, 1964
ROBERT S. BACKUS, '31, May 27
THOMAS S. COMBS, '32, December 9, 1964
EDMUND M. RAGSDALE, '33, August 5
MARO F. HAMMOND, '36, June 6
GORDON D. WAGNER, '37
JOHN J. DEVINE, '40, March 10
JAMES H. DINSDALE, '40, August 28
PAUL C. GROSSE, '43, October 2*
JUAN C. PEREIRA, '44, January 1
RICHARD T. NOE, '49, June 8
ALAN L. RICH, '54, August 4
JERRY A. ROSE, '55
CLEMENTE CHIRINOS, '56, September 17
KENNETH W. KRUSE, '61, September 28

*Further information in Class News.

very much. I have an industrial tract going in San Leandro which gives me something of interest. My wife is fortunately free of infirmities. And my sister Dorothy is living out here now. She was with my wife and me at the class 50th Reunion on Cape Cod. . . . My two grandchildren, Merilyn and Susan, provide the chief activity of the family. Merilyn has graduated from U.C. at Berkeley. Susan will graduate next Spring."

Gilbert Tower, XIII, who at present writing is on the high seas returning from England wrote in August: "About September 10 Elizabeth and I will be sailing for England on the Sylvania, Cunard Line, from Boston. Elizabeth has been quite keen on seeing more of England, and I am also, but only hope that a little stiffness or something in my legs doesn't bother. We will knock around England two to three weeks and come back on the Queen Elizabeth to New York. Then before long I may have to have a cataract removed from one eye. Except for that we are o.k. I have been very busy with the planning board, not a member but an associate on town planning projects." . . . **Leonard Cronkhite,** IV, writes: "As to news, we have settled in at our present address for the duration—as yet well and fairly vigorous in the studies before us, the welcome visits of eight always inquiring grandchildren, and the welcome proximity of two able sons and a daughter. It is no sign of decadence that tea is served at 5 for any who will come to keep alive that talk and those sentiments which bind us together." Incidentally the *Patriot Ledger* of Cambridge, Mass., carried quite an article in June regarding plans for a 50 million dollar expansion of the Children's Hospital at the Medical Center in Boston, "the largest such program ever undertaken by any pediatric hospital in the world." Our Leonard's son, Leonard W., is General Director. . . . **Izzy Nye,** V, reports that he is now a great-grandfather and that "my son's son is a Harvard alumnus as well as a Harvard Business School graduate." Congratulations Izzy. Izzy wonders how many great-grandchildren '05 can claim. I cannot qualify. My oldest grandson is a Junior at Rollins College, Winter Park, Florida. . . . **A. Senior Prince**, X, sends kind regards to all who may remember him. His address is 4 West Fourth St., Cincinnati, Ohio. **John E. Lynch,** II, has moved from Winthrop, Mass., to 46 Mt. Hood Terrace, Melrose, Mass. **Arthur Russell's**, XIII, new address is 3227 Biscayne Blvd., Miami, Fla. Art recently attended a meeting of the M.I.T. Club of South Florida. He was the oldest alumnus here. . . . **Frederick E. Burden,** VI, old address, No. Attleboro, Mass., new address, 2 Grace Avenue, Warwick, R.I. . . . I have learned through a son of **George H. Barrows,** IV, that his mother and father are living at the Hughes Convalescent Home, 29 Hughes St., West Hartford, Conn. His father had a shock, but had recovered quite well and hopes that some of his classmates might send him a card occasionally. . . . **J. Wallace Taylor,** II, has a new address, 2943 Montana Ave., Cincinnati, Ohio. . . . Just in from Houston, Texas, a letter from **Arthur J. Manson,** VI, an apology for past neglect and a report to make up for it. "You wanted to know what I looked like, what I had been doing since 1905, 'long time no hear.' Well, here goes: After graduation I went with the Westinghouse Electric Company at East Pittsburgh, Pa., in the student course. I decided to follow electric transportation. I was connected with that branch of the Westinghouse activities until my retirement in 1948. A contract had been taken to electrify the New Haven R.R. Locomotives were designed for dual voltages—11000 volts AC single phase operation on the New Haven and approximately 700 volts DC operation over the N.Y. Central's right-of-way. I worked on the first locomotive and later was associated with their operation on the railroads. Higher and higher voltages had been applied to the transmission of power for industrial use and by alternating current. Why shouldn't high voltage AC be used for electric railroad service? Westinghouse, a pioneer in AC for all uses, so believed and successfully demonstrated the feasibility and advantages of high voltage AC for railroad operation. Other railroads followed: the Norfolk and Western, the Virginian, and the Pennsylvania. Not only was I in touch with this heavy traction, but the simple trolley car needed attention. In the several years after 1905, electrical equipment for street cars were sold yearly by the hundreds. Steam locomotive operation was expensive, due to relatively short distances between layovers, coal and water service requirements, etc. When the diesel engine was developed where the pound weight per horsepower made it possible for mounting in a cab, due to relatively high r.p.m., the steam locomotive was doomed. We had electric railway motors, generators and control available to obtain a power unit capable of operating hundreds of miles between inspections. September 1948 came around—my retirement date. My son and daughter were located in Houston, Texas. My wife and I, having no relatives in Pittsburgh, went to Houston, where I built a house to enjoy the company of our children and grandchildren. My son has 3 boys, the oldest A.J.M. III. Two of the boys are attending the Univ. of Texas—the third is a senior in high school. Realizing that I should have some hobby to work at and keep my brain active which had been at high pitch from the first day I entered Tech until my retirement date in 1948, I decided to take up photography which had unlimited possibilities to exercise one's mind. I built my dark room and joined two camera clubs. It was lots of fun and keen competition in the clubs made the work not only very interesting, but it was able to train me to be a fairly successful amateur photographer. I decided to see something of the world outside of the U.S.A. which I had pretty well covered during my work with Westinghouse. The Thru The Lens Tours, located in Los Angeles, arrange conducted tours especially for those interested in photography, and I took a six-weeks tour to South America. I went down the West Coast and back up the East Coast with side trips including flying over the Andes four times inhaling oxygen at high altitudes due to use of non-pressurized planes. I kept busy with my Exakta cameras taking approximately 1100 Kodachrome 35 mm slides. My friends were so interested to see my slides that I worked out a plan. I selected 140-150 slides into a group that would tell a story. I had six groups and then wrote my scenario for each group, putting this on a tape recorder with native music inserted at intervals. I have shown these slides many times to various groups. Two years later I took a similar trip to Japan, Hong Kong and Manila. I followed the same procedure with my 1200 odd slides. The most interesting parts are: first the complete recording of rice production all the way from the seed planting up to the harvesting and second, the complete story of the production of the cultured pearl developed in the oyster. I couldn't stop photography at this point as the hobby had been so beneficial to me, so I decided to try color slide duplication. Had great success with improvement in some slides by using the Kodak Color compensating filters. For instance, if original slide was too blue, cut out some of the color. On others, add some color for improvement. My ambition next was to duplicate a few of my special scenic and portrait slides, first into prints 11" x 14" or larger having colors matching the slides, and second to create transparencies showing original colors. The problem wasn't too difficult. Make a black and white negative from the color slide and enlarge on matte paper. For transparencies enlarge on Transilite, a Kodak safety film suitable for projection printing. Marshall's oil transparent colors were then applied. Now I can enjoy my most prized pictures without screen projection. My health is good but, of course, as can be expected I am not as active as I would like to be. I had looked forward to attending our 50th and 60th class reunions, to talk over old times with my classmates, but certain circumstances interferred."

Herb Bailey, V, says: "I have had a good summer for it has been very comfortable here in So. Calif. Slept with a blanket over me all but one or two nights. Lots of 'doings'. One granddaughter married, another announced her engagement. My daughter and her husband had a 3-weeks trip to Hawaii given them by their three children to celebrate their 40th wedding anniversary. The kids also put on a nice party, a day or two before their parents went away. The really important event was son Edgar's being sent by USGS to conduct the first course in geological mapping techniques for the Central Treaty Organization in Turkey. He had geologists from Iran, Turkey and Pakistan in his classes. He also visited the mercury deposits there and will see the mines in Greece, Italy, Spain and perhaps others on his way home. I have gotten my 'Potshop' rehabilitated and have been working out there a lot of the time. It was just a year ago I was in the hospital, $3000 worth, and now I'm about back to normal for an 86-year-older." Funny these fellows from California never mention inclement weather, but a friend of mine just back after two weeks there does talk about it. However, California is a large state. . . . **Fred Poole,** VI, should have been M.I.T. '65 so that his yearning

for humanities would have been satisfied. I am sure most of us feel that way. It emphasizes the fact that our alma mater is now turning out the "whole man" instead of the engineer or scientist of the old days. A quotation from his open, active and ambitious mind: "Thank you for the notes of July 29th and August 19th with clippings from the Boston Herald about bird-watchers. This weekend Dorothy and I are going to Cape May to attend the 3-day annual fall meeting of the New Jersey Audubon Society. There will be a couple of hundred of us, on bird-walks, and probably a thousand people will attend the two evening birding movie in the new auditorium, unless this current Northeaster washes it away again. As I become more sedentary, I'm doing a lot more reading. Late years, I have sort of resented the fact that my 'education' (including M.I.T.) did not include at least a smattering of natural science, geology, biology, philosophy, etc. To remedy this Dorothy and I took a couple of ten-week courses (evenings) in geology and paleontology a couple of years back and, more recently, a couple of 10-evening adult education courses in philosophy at our Unitarian Church of Southern New Jersey, at Cherry Hill. We quit taking these latter courses because they were always somewhere in the middle, historically, and hard to follow. In order to lick the dang thing we laid out a course of home reading. I have finished Bertrand Russell's 900 page *History of Western Philosophy* and am now, two-thirds through H. G. Wells' 1100 page book *The Outline of History* and then will tackle Will Durante's 600 page *The Story of Philosophy* and, after that, Popkin and Stroll's 190 page *Philosophy Made Simple* (re-read). At the rate of 15 to 20 pages per day, this takes about six months, (in competition with the *N.Y. Times* and *Business Week* and the *National Observer*). Meanwhile, we are revamping Dorothy's hour-long movie 'Old Cape May' and she is taking a lot of new shots. We spent a couple of weeks in August doing that at Cape May."

Robert F. Luce, I, of 3130 Wisconsin Avenue, Washington, D.C. writes: "This time I have a very good reason for not replying earlier: early in July, while on vacation at Myrtle Beach, S.C., I had the misfortune of falling and breaking my hip. Spent six weeks at the hospital there —a perfectly marvelously planned and operated one, I must mention. Then a month at Charleston, S.C., recuperating and then back here to recuperate still further. Am coming along very well indeed, get around in a limited degree, and hope to be as near normalcy as soon as possible. My son, Robert James, got a Master's degree in Library Science at Drexel Polytechnic Institute last June. His wife got a similar one a year earlier. They now live in Philadelphia." To those who have responded to my "dues" request for news and have not seen their response in the Review to date, I mention again that there is a limit to our space and you'll be in print in January. To all who have cooperated my thanks and a wish that I had a stenographer and could answer by personal letter. I might add that the widows of two of our departed classmates have sent in their Senior Portfolios. If someone, who has not the Portfolio, and who would like to see what their classmates looked like sixty two years ago, it's yours for the asking. . . . **Ernest Gail Schmeisser,** VI, died in Baltimore on May 3, 1966. The Baltimore Evening Sun carried the obituary: "Funeral services for Ernest Gail Schmeisser, 84, retired electrical engineer, will be held at 11 a.m. tomorrow at the Cathedral of the Incarnation. Burial will be in Green Mount Cemetery. Mr. Scheisser died Monday at his home in the Charles Apartments after a prolonged illness. Born in Baltimore, he was graduated from the Johns Hopkins University where he and his three brothers played lacrosse. He also attended the Massachusetts Institute of Technology and was in the electrical engineering field on his own before retiring many years ago. Mr. Schmeisser was a member of the Engineers Club of Baltimore, the Baltimore Country Club, the Johns Hopkins Club, the Gibson Island Club and the Lake Placid Club. He is survived by his wife, the former Ursula Gray Slaughter; a brother, Gerhard L. Schmeisser of Baltimore; three nephews and four nieces." From letters from Mrs. Schmeisser I had known that he had been ill for a long time.—**F. W. Goldthwait,** Secretary, Center Sandwich, N.H., **Gilbert S. Tower,** Assistant Secretary, Cohassett, Mass.

'06

Many of you now have two different addresses during the year and except for **Frank Benham,** we are not sure just when you switch. It would be a help for class secretaries if you switchers would send us a note, or even a postcard, as soon as you reach your winter quarters, giving us the address and zip number, etc., and telling us about how long you'll be there. It keeps the Alumni Office busy sending us the regular form reporting the change of address, but they are often considerably delayed, or never come. Those AR reports of addresses with zip numbers are the only "news" received here since before reunion, so—to complete these brief notes I'll repeat what I wrote a year ago —"Looking out at the colorful autumn foliage it is hard to realize that when you read these notes Christmas will be in the offing. With our best wishes to you all for a happy, merry, Holiday and a New Year full of interest and satisfaction, from Marion and—**Edward B. Rowe,** Secretary-Treasurer, 11 Cushing Road, Wellesley Hills, Mass. 02181

'07

The last two weeks of September, your Secretary and Mrs. Walker spent their vacation on Cape Cod. An afternoon was enjoyed at the home of **George Griffin,** I, and "Giffy" in Woods Hole. George was treasurer of the class during our junior and senior years. He and I did our thesis together, and each was best man for the other when we were married. George retired several years ago from the Falmouth Water Department but still carries on a Civil Engineering business with the help of his son Robert. . . . I also called at the home of **Milton MacGregor,** VIII, in Brewster, as I wanted to learn the latest in Mac's mountain climbing efforts. A note in the Cape Codder newspaper of September 29 ran as follows: "Milton E. MacGregor recently climbed Mt. Washington on his eighty-second birthday to attend the fiftieth anniversary of the opening of the Lakes of the Clouds hut, run by the Appalachian Mountain Club, where he was the first hut-master. He was presented with a birthday cake inscribed 'Happy Birthday, Red Mac,' the name by which he has long been known in the White Mountains." I further learned that with his twin granddaughters he went on a camping trip. Starting at Jay Peak, near the Canadian border, they climbed to the summits of Lincoln Mt. and Mt. Mansfield in Vermont, Later, he did some other climbing near Pinkham Notch. . . . Another very active class member is **Jim Barker,** I. His activities are in the hunting and fishing fields. He still is very faithful in helping to keep M.I.T. running smoothly and manages to attend all the Corporation meetings. Sometime, possibly next year, he plans to invite all the '07 men who can make it to be his guests at a dinner in Boston. Many of you will recall the very pleasant time we had at a similar dinner given by Clarence Howe several years ago. . . . **Donald Robbins** and **Phil Walker** attended the Alumni Officers Conference at M.I.T. on September 9 and 10. Part of the Conference, and one of the meals, was held in the new Student Building, the Julius Stratton House. We were privileged to hear M.I.T.'s new President, Howard W. Johnson, speak at the buffet dinner in Walker Memorial on Friday evening. On Saturday, a series of conferences was held in one of the large lecture halls of the new Ida Green Building followed by dinner at the Faculty Club. Mrs. Karl T. Compton was the after-dinner speaker. Her message was a fitting climax to two most interesting and informative days. . . . There is one change this month to make on your Class Roster. **Andrew W. Hull,** XIII, has moved from Wyoming to the East. His new address is 2126 Connecticut Avenue, N.W., Washington, D.C. 20008. Before you have read these notes, early in December, all the class will have had an opportunity to answer and return to me a questionnaire relative to our 60th Class Reunion to be held June 1967. The place of the Reunion, the form it will take, the length, and other details will be determined by the answers on your questionnaires. The more replies I receive, the better the mind of the class will be known. If you have not answered your letter, please do so now, today.—**Philip B. Walker,** Secretary and Treasurer, 18 Summit Street, Whitinsville, Mass., **Gardner S. Gould,** Assistant Secretary, 409 Highland Street. Newtonville, Mass.

'08

The first dinner-meeting of the class for the 1966-67 season was held on Wednesday, October 5, at the M.I.T. Faculty

Club, 50 Memorial Drive, Cambridge, Mass., at 6 p.m. **Bunny Ames, Vick Carter, Myron Davis, Paul Norton** and **Joe Wattles** were there with guests, Mrs. Norton and Mrs. Wattles. We met in the cocktail lounge and while enjoying our favorite tonics and crackers and cheese from the Club buffet talked over the doings of the past summer. About 6:30 we adjourned to private diningroom 4 and enjoyed the excellent food as usual. Wishing you all a merry Christmas and a happy New Year.—**H. L. Carter,** Secretary, 14 Roslyn Road, Waban 68, Mass., **Joseph W. Wattles,** Treasurer, 26 Bullard Road, Weston 93, Mass.

'09

In the November Review we quoted **Molly** as stating that he and Jeanne were unable to attend Alumni Day since they were taking a little vacation in Europe. Molly later reports: "I do not know if any account of that travel would be particularly interesting to members of the class. Since you requested, however, I might say that I went abroad with the expectation of conferring with a consulting engineer in London with whom I had worked in the past; and that there was a possibility at the time of my departure that I might be requested to go either to Athens, Greece, or to Bangkok, in connection with professional assignments. My London engineer went to Italy on vacation before I arrived there; and neither of the other two possibilities developed. As a result the trip was entirely a vacation, which Jeanne and I enjoyed greatly in London, Copenhagen, Vienna and Paris." . . . In the July Review we wrote of **Ken** and Frances **May**, their three children, fifteen grandchildren, and five great-grandchildren. Later Ken reported that he and Frances were quite busy in the early summer. Their oldest granddaughter graduated from Bates College in May and was married May 21. The next oldest granddaughter was graduated from Smith College June 5, the same college from which her grandmother graduated in 1909. . . . During the summer **Art Shaw** received a letter from **Keyes Gaynor,** his roommate at M.I.T., enclosing a clipping. Quoting from the letter—"Enclosed is the record of a misspent life. I have made a lot of money for other people but none for myself. I have just finished what I call a little thesis on the rough riding of fast moving passenger trains, especially the transverse movement. The idea developed from trying to determine the stresses in a one-axle truck for articulated trains which I have patented. I would send a copy of it to the group at M.I.T. which is supposed to be studying the railroad situation, but it is so simple that I doubt if they would understand it. Mrs. Gaynor is more or less of an invalid, but she gets around with a walker." The clipping from the *Sioux City Journal,* with the title "Devised Method Used in 1-Course Paving," consists of four columns and includes a picture of Keyes. The clipping features the fact that in 1910 Keyes pioneered in laying a one-course pavement which is still in use and in excellent condition after 55 years. Earlier pavements were laid in courses or layers. The one-course pavement proved to be much cheaper and could be laid in a single operation. Keyes is recognized as a leader in developing this type of pavement and its success is attested by the fact that all modern highways are laid in this manner. Keyes came to Sioux City in 1889, was city engineer for several years, is now a consulting engineer, a member of several engineering societies, and a member of St. Paul's Episcopal Church. He and Mrs. Gaynor have one married daughter. . . . It gives us great pleasure to report that on Sunday, October 2, a reception was held at the Winchester Country Club to honor the fiftieth wedding anniversary of **Henry** and Madge **Spencer.** Henry married Madge Hovey, Smith '15, on October 2, 1916. The reception was planned and carried out by their children and was a semi-surprise. Approximately fifty relatives and close friends attended, including two classmates, **John Davis** and **Chet Dawes** with their wives. Since graduating from the Institute, Henry has held top positions in the Blanchard Machine Company of Cambridge, which is now a Division of Pneumo Dynamics Corporation. At the present time he is a part-time consultant. Their children are Mrs. Janet S. Willis, Smith '39; Kendall H. Spencer, Chief Engineer of the Blanchard Machine Company; David E. Spencer; Richard W. Spencer, M.I.T. '50, a consultant on electronic design, digital circuits and systems. The class heartily congratulates Henry and Madge on their fiftieth anniversary and extends its best wishes.

It was with the deepest regret that we learned by telephone from John Davis that **Joe Parker,** 79, had passed away October 6 at the South Shore Hospital, Weymouth, Mass., after a brief illness. Services were held on Saturday, October 8, at the Russell Funeral Home, Braintree. The class sent a floral tribute and was represented by **John Davis** and **Ben Pepper**. The Secretary has written to Mrs. Parker expressing the sympathy of the class as well as his own. Joe was born in Somerville, Mass., and prepared for the Institute at Rindge Technical School at the same time as John Davis, so that they were always close friends. At the Institute Joe was a member of the Class Relay Team and of the Tech Show chorus. He performed his thesis with Ben Pepper. As a civil engineer, he specialized in construction, and his work took him to different parts of the country. He was employed by such well-known engineering firms as Jackson and Moreland, Hoyle, Doran and Berry, and as late as Alumni Day he was devoting almost full time to Cleverdon, Varney and Pike (July Class Notes). For 43 years he made his home in Braintree. As we all know, Joe was a loyal and faithful member of the class and the Institute and we could always depend on seeing him at reunions and on Alumni Day. He was with us on Alumni Day last June and seemed in normal health which was substantiated by the fact that he was working nearly full time. Besides his widow, Elinor (Sturtevant), he is survived by two daughters, Mrs. Janice Foster of Conway, N.H., and Mrs. Virginia Blanchard of North Conway, N.H. . . . From the Alumni Office we have received notice of the death on August 30 of Professor **George Washburn,** VIII, of Cambridge, Mass. Although we knew George well in the early days, we have no record of his later career but may be able to obtain information later.—**Chester L. Dawes,** Secretary, Pierce Hall, Harvard University, Cambridge 38, Mass., Assistant Secretary, **George E. Wallis,** Wenham, Mass.

'11

During the summer **Carl** and Helen **Richmond** moved to 1 Herrick St., Winchester, Mass. . . . A letter last September from **Aleck Yereance** said he was very sorry to miss the Reunion, but he felt he had to stay at his duplex summer home on Old Wharf St. in South Harwich to have his daughter's half of the house ready for her and her family who were arriving that weekend. He enclosed a clipping telling of the death on Sept. 2 of **George B. Forristall** in Newtonville. His wife Ann died several years ago. He leaves a daughter and two sons. . . . One Saturday in September, Alma and I drove down to Sandwich and called on **Robert** and Margaret **Morse** at their summer home. It is a large house, over 100 years old, and furnished with beautiful heirloom antiques. Robert is a past president of the Sandwich Historical Society and a trustee of the Sandwich Glass Museum which is run by the Society. The Morses took us on a personally conducted tour of the Museum which is located directly across the street from their house. I had no idea what fine and intricate workmanship went into the manufacture of glassware at the Sandwich Glass Works which employed more than 500 people a century ago. . . . **O. W.** and Gertrude **Stewart** leased their blueberry patch the past summer and went on an extended European tour. . . . Just before the deadline for sending these notes in, I received word from the Alumni Office of two additional deaths. **Roy D. Van Alstine,** 600 East Ocean Blvd., Long Beach, Calif., died Sept. 16 and **Frederick W. Covill,** 138 College Ave., Malone, N.Y., last April 21. . . . These notes are short; "write to Obie."—**Oberlin S. Clark,** Secretary, 50 Leonard Rd., North Weymouth, Mass. 02191

'12

Word has just been received of the death of **Christopher Fallon,** 31 Midland Avenue, Berwin, Pa. Unfortunately we are unable to obtain any further details. . . . A good letter from **Arch Eicher** tells of the trip that he and Agnes took last spring going down to Texas to see Agnes' father who is now 86. On the way they drove down the east coast of Florida and up the west coast, spending about a week in Venice near **Jack** and Marion **Lenaerts.** From Atlanta they took a plane to Houston and then drove down to their ranch at Laredo where they were joined by their daughter Alice and her eight-year-old son

Tommy and three-year-old Cathy. They spent about 10 days on the ranch herding the horses, Herefords and dogs and enjoyed plenty of catfish and southern hospitality. It took about 3 months to cover this ground. Arch retired in January of this year, but since returning from his trip, they have called him back to the office for over a month helping them straighten things out. . . . **Carl** and Betty **Rowley** took a three-months trip to Europe this spring covering the country from Bergen down through Switzerland and France. . . . **John Pettingell** was good enough to write an informative letter telling of his activities since graduation. After school he started with E. H. Rollins & Sons, investment bankers in Boston. He left them to go with the Anaconda Copper Mining Company in Montana and then with the U.S. Reclamation Service in Montana. After two years with the Illinois Zinc Company in Peru, Illinois, he spent two years with the U.S. Army Air Service as a 1st Lt. and pilot in France. In 1919 he went with the Hammel Oil Burning Equipment Company in Boston. In 1921 he formed his own company, known as the John Pettingell Mfg. Company, engineering sales representatives for heating, ventilating and cleaning equipment. In 1956 he formed a partnership with his son Richard, the Pettingell Associates, of Belmont, Mass. He is now completely retired and devoting himself to genealogical and historical research which he finds an interesting and full-time occupation. He and his wife were in England last year where he found valuable records and established contacts for this work. He asks any of his old friends who are interested in genealogy to contact him as he would like to correspond with them. Last winter they were in Puerto Rico and had a pleasant visit with **Antonio Romero** who graduated with us. Romero is now an industrialist and active.—**Frederick J. Shepard, Jr.,** Secretary, 31 Chestnut Street, Boston, Mass. 01945, **John Noyes,** Assistant Secretary, 3326 Shorecrest Drive, Dallas, Texas 10145

'13

To all you lads and lassies of the Class of 1913, M.I.T., the Capens wish you all a very merry Christmas and a very happy New Year. We received a "spot" of news relayed through the Alumni Office and we quote, "No news of importance other than I am still alive and kicking after ten years of retirement and two heart attacks. Enjoy living on the shore of the Danvers River, a part of Salem Harbor." Signed Ed Jewett, '13. We are sorry that you have been ill, but are very glad that you are enjoying life now. Again we are bearers of very sad news. A note was received a short time ago from Mary E. Lynam stating that **Emery J. Theriault** of 2314 Hildarose Drive, Silver Spring, Md., is deceased. A sympathy card was sent to Emery's address but to date no answer regarding further details has been received. If any of his friends have further information we shall be very glad to enlarge on our notes. . . .A very explanatory letter has been received from the new Editor of the *Technology Review,* John I. Mattill. He mentioned his future plans for the Review and particularly of the opportunity of being able to insert photographs of good quality in our notes. More power to you, and it will be a pleasure to cooperate with you. Again, it is a privilege to welcome our new President of the Alumni Association, Theodore A. Mangelsdorf. Ted, you can depend on the Class of 1913 to give you full support during your term of office. . . . To **Eddie Hurst** goes the deepest condolences from us all. The death of his wife Harriett was a shock. We who knew her during the past fifty years appreciate her worth as a lady and a helpmate to Ed. A note was received from **Arthur Hirst** and we quote: "You may have seen the obituary in the Boston Herald listing the death of Ed Hurst's wife Harriett on September 24th. My wife and I knew Harriett for many years and had the greatest liking and admiration for her. With many illnesses over the years she was always patient and cheerful and she, with Ed, was regarded in the highest degree by our classmates, who I know have much sympathy for Ed and his family." Nicely expressed, Art.

The Capens were very much honored as representatives of the Class of 1913 to be invited to attend the Inauguration of Howard Wesley Johnson as the twelfth President of M.I.T. Friday, October 7, 1966, at Rockwell Cage. This was a very spectacular event, with the parade of over 400 representatives of as many colleges and universities from all over this country and from all over the world. The ceremonies were very impressive and were performed in a manner as would be expected from the halls of Massachusetts Institute of Technology. . . . Again we, with a heavy heart, announce the death of another dear classmate, **Heisler Harrington**, Pleasant Valley, Easton, Md. He died sometime in December 1965. Can any of his friends or classmates enlighten the Alumni Office or your Secretary of more specific details in regard to him? Also we are informed by the Alumni Office by a very brief notice that our classmate, **Arnold F. Rich,** 1186 South William Street departed on March 4, 1964. **Bill Mattson,** will you check with the Denver newspaper? A letter which was sent out to all 1913ers was returned with a notation "Moved, not forwardable." Can anyone locate **Joseph Balch,** formerly living at 9515 Goebel Avenue, Westchester, Los Angeles 45, Calif.? We have had very good responsive returns from the bills for 1966-1967 class dues together with the questionnaires. The following facts were recorded: **Charles Thompson**, widower; daughter, Carol Crandall Hester, 47 years; grandchildren: Joan Carol Crandall, 21 years; Philip Lester Crandal, 16 years. **Vernon G. Kay,** wife, Beatrice M.; part-time consultant in factory management; adjunct professor of Industrial Management Engineering, Fashion Institute of Tech (Manhattan). **Edward Hurst,** wife deceased; children: Edward, 46; Barbara, 42 years; Robert, 40 years; grandchildren: Christopher Hurst, 17 years, Harriett Root, 17 years; Deborah Root, 14 years; Johnathan Root, 11 years; Jennifer Hurst, 3 years; Bertha Hurst, 2 years; Robert Hurst, 1 year; Betsy Hurst, 8 years; retired, inventions for relief of human suffering, have built the finest home workshop with 5000 gadgets. Ed writes: "Thanks for your thoughtfulness in sending sympathy. My beloved wife was very precious and after over 50 years I have found loving memories I will treasure for ever and ever." **Joseph H. Cohen,** wife, Rose; children: Joseph, Jr., 46 years; Ira, 43 years; Nancy, 40 years; grandchildren: Paula, 16½ years; Lynn, 15; Peter, 13 years; Jason, 7 years; Jonathan, 14 years; Matthew, 12 years; Douglas, 10 years; Priscilla, 6 years; and Joseph 3rd, 9 years; retired. **George A. Dempsey,** wife, Evelyn; children: Diane Schott, Radcliffe, 1963; grandchildren: Anne Schott, 1½ years; great-grandchildren: "Phil, are you kidding?" **David Stern,** wife, Della; children: Hannah Ruth Weinbaum, 51 years; Stuart Lawrence Stern, 46 years; grandchildren: Margery, 27 years; Paul T. Weinbaum, 24 years; Jeffrey T. Stern, 17 years; Andrew R. Stern, 15 years; great-grandchildren: Peter Margiloff, 4 years; Guskn Margiloff, 2 years; activities: treasurer, 7 General Manager, Stern Can Company, Peabody, Mass.; past president, Board of Directors, Can Manufacturers, Washington, D.C.; Grand Lodge of Masons, Boston, Mass.; President of Temple Mishkan Tefila, Newton, Mass.; Kirnwood Country Club, Salem, Mass. Well that is a sample of our affiliations, activities, hobbies, and other facts of interest with more to follow this year.—**George Philip Capen,** Secretary and Treasurer, 60 Everett Street, Canton, Mass.

'14

We are glad to note, following the accident which we reported on last month in which **Harold Richmond** put his arm and shoulder out of business, that he has been making good progress and hopes to discard his sling very soon. There is a temptation to philosophize once more on the difference between M.I.T. and life in general which we knew 50 odd years ago and present times. For example, I am sitting here in Maine some hundreds of miles from Cambridge watching the rebroadcast of a soccer game between M.I.T. and Middlebury which took place some hours before. On the other hand I have beside me a notice just received under the heading "Humanities Series" which schedules a number of appearances during the season in the Kresge Auditorium of well-known musical groups such as the Hungarian Quartet and Borodin Quartet. Verily this is the day of the multiversity. It is mid-October and **Ray Dinsmore** is still in the North woods, with a gun, and hopefully enjoying the scenery, which has been unusually colorful this year. . . . And speaking of color, or the absence thereof, we will break down and end this with an anonymous bit that **Homer Calver** sent us some time ago.

North Altitude

I cannot get used to seeing my friends
gray headed,
Fantastic sight! Incredible masquerade!
Mirth and amazement fetter my tongue
Those white-wigged children! Or these—I
saw them wedded,
My two eyes for my witness—they are
young!

We were always the young; our elders
were most pointed
In snubbing us to place—as still they
are—
Though grown a little feeble, with a
vagueness
As if their eyes were on a rising star.

Oh, can it be our ship is moving north,
And while we napped, has entered an
icy zone,
Where, all at once, we feel the altered
air,
And looking up to see where we have
blown,
We note the white frost on each others
hair!

Herman A. Affel, Class Secretary, Rome, Maine. Mail: RFD 2, Oakland, Maine 04963

'15

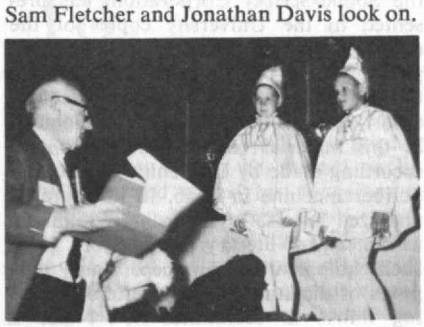
Our Class has suffered a hard loss in the sad passing of **Speed Swift,** who died September 21 in New London, N.H. We have lost a fine old friend and an outstandingly popular classmate. Always a regular and generous supporter of all our affairs, Herb was active in class and alumni activities and attended all our reunions and until recently, our Boston dinners. You'll all remember his red upholstered Cadillac with the trick top, the two-tone horn and the "SWIFT" number plates. Speed originated our famous class slogan "help Azel," which caption replaced the censored part of some artistic old movies he had, remember? We sent flowers and Margaret and **Chet Runels, Whit Brown** and I attended his impressive services in The First Baptist Church at New London. We were glad to have a chance to talk with Molly Swift later. The eulogy given by Dr. J. D. Squires of Colby Junior College is a splendid and glowing tribute to Speed's life and character and his interest and work in many civic, charitable and political activities, with a touch on his zest for living. Dix Proctor, 1917, for their class and for Speed's fraternity sent us their sympathy in the sad loss of this illustrious classmate. Speed left a host of staunch friends. We'll miss him, but we'll always remember him as a loyal and devoted friend and classmate. The Class Supreme—26 classmates and guests proved this again at a class dinner September 30, at the M.I.T. Faculty Club, Cambridge. Another enthusiastic, lively and enjoyable meeting opened with the (old) Pirate, skull and crossbones et al, leading a rousing "We are happy" cheer. Cocktails and a delicious Bill Morrison dinner put us all in a pleasant and nostalgic mood. Absentees we greatly missed were **Sam Berke, Jerry Coldwell** (away on Air Force business), **Alan Dana** (surgery), **John Dalton** (Providence), **Reggie Foster, Larry Landers** and **Chet Runels** (unable to make it from Lowell), **Boots Malone** (hibernating in Chester, Vt.), **Harry Murphy** (who with his wife Lucy was flying to Ireland the next night), **Pop Wood** and **Louie Young.** We missed them all. To make up for his absence, Louie sent a big check that bought an extra drink for everyone at the dinner. The next week I had a delightful lunch and visit with Pop Wood who has been doing a lot of riding in the countryside around his lovely place in Peterboro, N.H. Present at the dinner were **Larry Bailey, Wayne Bradley, Whit Brown, Jack Dalton, Ray De Lano,** Gene Eisenberg, '43, Herb Eisenberg, '52, David Hamburg, Jim Hoey, '43, **Clive Lacy, Azel Mack, Hank Marion, Archie Morrison, Frank Murphy, Ben Neal, Ozzie Osborn, Wally Pike, Pirate Rooney,** Gerry (Pirate Jr.) Rooney, **Charlie Norton, Al Sampson,** Admiral **Bill Smith, Jac Sindler, Fred Waters, Easty Weaver, Max Woythaler.** This was Ray De Lano's first class dinner and we all welcomed him gladly with the hope he will attend regularly in the future. Our young members were as welcome as ever. We'll always expect them with us. In the regular long distance competition there were more runners than sprinters: Larry Bailey and Ray De Lano, Duxbury; Wayne Bradley, Moosup, Conn.; Whit Brown, Concord; Archie and Fred, Marblehead; Max, Framingham; Al, Beverly; Charlie Norton, Martha's Vineyard; Ozzie Osborn, Hartford; Ben Neal, Lockport, N.Y.; and Hank Marion, Plainfield, N.J. The delightful surprise of the evening was Hank Marion's sudden and unexpected attendance. Hank flew over from New York just for the dinner and it was wonderful to see him again looking and feeling so well. A fine bunch of classmates and friends who bear out so forcefully the remarkable friendship and camaraderie is this intangible aura about our Class. Because of the uncertain winter weather and absence of many men on cruises or in Florida, Larry and Bur are setting up our annual New York City dinner for sometime in April 1967, instead of January. Plan for it and we'll see you there! Without disclosing what tricks he has up his sleeves, Al said that a new and unusual twist to the annual class cocktail party here next June would add a welcome surprise for everybody. Better plan to come—June 12 at the M.I.T. Faculty Club. Jack closed the evening with a splendid testimonial to our magnificent class. After the dinner a few of the fellows came over to our apartment to visit with Fran. Ben Neal and Charlie Norton stayed over with us as house guests. On Saturday morning Jac Sindler took us for a visit to his plastic molding plant—Spirit, Inc.—at Malden. Then Ben went on down to spend the weekend with Charlie at his place on Martha's Vineyard. At the Annual Alumni Officers' Conference at M.I.T. on Sept. 9-10, Clive, Max, Al and I represented our Class. **Phil Alger** joined us later. The dedication of the Pierce boathouse on the Charles was particularly pleasant. Cocktails and dinner at Walker Memorial were superb. Credit and thanks to the officers and staff of the Alumni Association for all they did to make this such a pleasant, interesting and enjoyable meeting. **George Easter** sent me a page from the July publication of the *New York State Society of Professional Engineers,* carrying an excellent picture of Phil Alger and this story: "Philip L. Alger, PE, was singularly honored by NYSSPE at the annual meeting in Montauk by being named Engineer of the Year. Mr. Alger's career has had a profound effect on the development of induction motors. His major contributions to the analysis of rotating electric machines have been in the critical area of reactance calculation, the understanding and prediction of losses and the reduction of magnetic noise. The contributions he has made in these fields have had major impact on the evolution of rotating machines. This has resulted in size reduction, development of new applications, and improved performance. These contributions to the development and improvement of induction motors and rotating machines are but a small part of the impact his career has made on the electrical industry. He is a Fellow of IEEE, a Fellow, ASME, a member of The Institution of Electrical Engineers (England), and a member of the American Society of Engineering Education. He is also a Fellow, ASQC (American Society for Quality Control), a member of Societe Francaise des Electriciens and, of course, NYSSPE. His recent activities include Adjunct Professor of Electrical Engineering, RPI; Director, Schenectady Citizens League, and many, many other civic and engineering activities. Mr. Alger has authored over 30 articles in *IEEE Transactions,* as well as many articles in *Electrical Engineering, The General Electric Review* and others." Congratulations, Phil, on this high honor and award. Phil recently wrote a very learned and searching essay, "Sympathy—A Guiding Force. An Essay on the motives that Move Men." About himself, George wrote that one son-in-law is an associate professor at the University of Florida and another one is an associate professor at an upstate New York College. . . . Beulah and **Earle Brown** wrote from Hawaii: "We always end up from Oakland by going out here and we enjoy it as much as ever. Kauii is not overdeveloped like Waikiki. The scenery is beautiful and we are many miles from the noise and crowds." Ah, me—we are awaiting our first local snow storm! . . . **Ernie Loveland** is still at it. Six pages more from Singapore tell of his wanderings in, around and over the Sulu Archipelago in the Philippines searching for his seaweed, Eucheuma. His lost luggage containing his passport has been found—a relief to him. In addition to his usual exposure to crude living, primitive people and uncertain transportation, he has now had a go with pirates in the Sulu Sea who plunder and kill their victims ruthlessly. And he was in Course X with me! . . . After many years of faithful and devoted work, Max has retired as our Class Agent. We are, indeed, lucky to have had Max on this job and the thanks and deep appreciation of the class go to him for his time, interest and work in so ably and successfully estab-

lishing such a fine position in the Alumni Fund for our class. Max will continue as a class officer and director of the Executive Committee. Good **Ben Neal** has agreed to be our new Class Agent. Many thanks, Ben, and all the best for success to continue Max's good work. And, so, here endeth the column for this month.—**Azel W. Mack,** Class Secretary, 100 Memorial Drive, Cambridge, Mass. 02142

'16

Our good president **Ralph Fletcher,** our 50th Reunion chairman **Steve Brophy,** and all the hard-working members of the Reunion Committee should have the benefit of reading all the praise and enthusiasm that have been coming in since the 50th became history last June. Still conversation pieces are the cannon shot at the luncheon on Alumni Day, the Bucentaur that floated the precious archives across the Charles River from Boston to Cambridge in 1916, and the 15-foot model of it constructed painstakingly and with an aesthetic flair for use in **Joe Barker's** presentation of the Class's 50-year gift to the Institute. Digging through the several-inches-deep pile of mail relating to the 50th Reunion, we ran across this intelligence in a letter from **Irv McDaniel** to Ralph Fletcher back in April: "The idea of presenting our gift in this novel manner is terrific! Bucentaurs existed from about 800 A.D. for about 1000 years. The type Professor Cram used was about 1100 A.D. It had a most ornate bow, an after deck house and a single tier of oars. The Doge was up at the bows with a most ornate, colorful stand and sun-shade. The deck house ran from mid-ship aft and extended beyond the end of the ship. The ship was painted 'dead' white. Sometimes they had a mast mid-ship with a regular sail, sometimes they had standards with colored streamers, but in general there was little color. I prefer the models from around 1450-1550 A.D. They were larger and sometimes had a double tier of oars. Thus you see there is a lot of latitude to formulate what you want. The next step is the size desired and how you are going to promulgate it through the tent to the speaker's stand. Will it be pushed, hand-drawn or automotive? And it will require steering. Will it be mounted on a boy's pull cart or a V.W. or a ½-ton truck? Will Joe ride it in or walk? If Joe rides it in will he be in the bows where the Doges stood? These are but a few of the questions you will have to decide before you turn it over to a model maker. And let's keep it beautiful." But you see, the problems were solved. There were six oarsmen, one rider, and two pushers, and they were all initially propelled by the now-famous cannon shot in the doorway of the Cage. So now let us get on to after items and think on future things like the 51st Reunion next June in Chatham. . . . **Earle Pearson** of Vero Beach, Fla., expresses thanks and appreciation to the 50th workers for the 'superb job' of planning and running the reunion—even the pictures of the 'Redcoats' at Cambridge were perfect. We enjoyed every minute of the four days and it was such fun to see so many of our classmates of 50 years ago and renew friendships." The **Bob Burnaps** of South Orange, N.J., too were warm in their praise of the reunion planners and doers, "they deserve lots of thanks for the time, money and effort expended in making the event such a pleasant experience." In mid-August, **Len Best** is said to have said: "The 50th Reunion was terrific, and to me the really significant facet of the reunion was the esprit de corps which permeated the whole project from that original meeting at Chatham Bars in 1965." And **Dan Comiskey** noted: "It was a fine gathering —everyone was so pleasant—a great class with fine wives, too." The **Jerry Reens** had a "marvelous time and enjoyed meeting everyone"; Blanche adds: "My sincere thanks to Mary Barker who was a most congenial hostess to all the ladies." Through the list of addresses sent out for the reunion, Jerry heard from "a long lost and close buddy at MIT", **Joe Farhi** of Brooklyn. "And would you believe it, after 45 years Joe picked Jerry out from the class photograph that Jerry had sent him." Yes, we knew Joe well at M.I.T., have talked with him on the telephone, and are sorry that health did not permit attendance at the 50th. . . . **John Gore** says: "Well planned and carried out—never a dull moment, and just one enjoyable event after another. You all who took part in the planning and carrying out of the reunion are certainly to be congratulated." . . . **Stew Rowlett** writes that they are looking forward to the 51st now—"the 50th was such a good job I'm sure we'll have a crowd next year." . . . And **Dina Coleman** says he's still wondering how Joe Barker did it—all that success on the 50th Class Gift. Says: "I could use the information in my job at Transylvania" (Chairman of the Finance Committee of the College) "and at the Philharmonic! Believe it or not, I spent a weekend at Niagara Falls in August. The Canadians have done a beautiful job on their side of the river. A visit to the Niagara Power Project on both sides of the river is worth anyone's time, aside from the never-ending wonder of the Falls themselves!" . . . **Howard Hands** regrets their inability to attend the 50th. For the first time in he doesn't know when, they didn't get to New England this past summer. "All we did was to fly to Chicago to be with son Richard and his family for a week, then fly right back. He has quite a family, too—six. Number six arrived in early August. Three gals, three boys, nice youngsters too. But a week with them is enough, and they probably say the same about us." Too true, says one grandfather to any old other grandfather, but not because we don't love 'em! . . . **Obie Pyle** too regretted that illness prevented him from being at the 50th but hopes now to be at the 51st. In his promotional work for the 50th, he kept in touch with quite a number of '16ers and has been pleased to forward a long letter from **Mark Aronson** in Florida. This will be covered in the next report. . . . And **Dick Fellows,** writing from Kelseyville, Calif., said it was difficult getting back to work after "the wonderful time we had at the 50th Reunion. Everyone connected with the program and arrangements should be congratulated on the perfect job they did. Mary Barker and her committee deserve extra credit for the excellent way all of the ladies were made welcome. The reunion was specially interesting to those of us who entered from Somerville High School, Class of 1912. Five of the six living graduates of that year attended the reunion—**Earle Pearson, George Anderson, Clint Carpenter, Frank Holmes,** and **Dick Fellows. Ed Weissbach** who was to conduct the memorial service was also a member of the class and we were all saddened to hear of his death just prior to the Reunion." . . . Along in August **Vert Young** wrote from Bogalusa, La., that following the Reunion, he and Sylvia flew to Montreal, then went by Canadian Pacific RR to Banff and by CNR from Jaspar to Vancouver. "Then on to Victoria, across on the ferry to Port Angeles, thence around the Olympic Peninsula, Mt. Rainer, Oregon Coast, Eastern Oregon, Idaho and Butte, Mont. There we turned in our rented car and came home with friends in their car via Moab, Utah and Western Colorado. A marvelous trip—did not get home until July 21st. One of the funniest things I saw at the reunion was **Jim Evans** trying on **Hovey Freeman's** blazer. It went around him one and a half times and Jim is not exactly a sylph himself!" . . . And **Kem Dean** writes that since returning from the reunion to Houston, he and Ada have been taking it easy "except for a couple of short trips by car up into what we call the 'hill country,' up around where LBJ's ranch is located. From about 75 miles northwest of San Antonio, that area about 100 miles in all directions is nice country with rolling hills, clear streams, and an elevation of about 1500 to 2000 feet which makes for cool nights even though the days get hot. There are nice guest ranches in the area, and several of our friends have cottages too." . . . **Steve Brophy** continued active after the reunion, not only in post-reunion activities but in other things, as for example as reported in the Spokane, Wash., *Spokesman-Review* of June 27. In that publication we have a picture of Steve as keynote speaker at the 63rd Annual Convention of the Advertising Association of the West. The caption reads: "Advertising Spokesman Describes Formula—Vital Role Seen for Advertising." And the article comes out with one of Steve's secrets for success in advertising: "The nature and purpose of

Joe Barker presents the '16 Class Gift as Sam Fletcher and Jonathan Davis look on.



advertising was explained here Sunday by one of the industry's most successful practitioners. Thomas D'Arcy Brophy, retired chairman of the board, Kenyon & Eckhardt Inc., New York, will deliver the keynote speech this morning following the opening general session of the convention in the Ridpath Hotel. In an interview Sunday evening, the past chairman of the American Association of Advertising Agencies related his views of the progress and problems of advertising—an industry in which last year American business spent $14.9 billion. There is a formula for any successful advertising, he said: 'Keep it simple, say it often, and make sure it's true'." Then Steve had the problem of getting back East from Jackson Hole, Wyoming when the airlines were struck. He made it by hitch-hiking rides on buses, trains and planes, and was able to take his part in the Northeastern Regional Vote Workshop of the American Heritage Foundation. As chairman of the Foundation, Steve delivered an address on "A Salute to Our Two-Party System." And who do you think gave responses—none other than the Hon. John M. Bailey, chairman of the Democratic National Committee and the Hon. Gerald R. Ford, M.C. (R-Mich), Minority Floor Leader, U.S. House of Representatives. So you see what Steve can do—almost anything—you name it!

The **Leonard Best**s took off by air on August 27 for a six-weeks trip to the Scandinavian countries plus the continent. A card from Stockholm tells of leaving for Copenhagen, notes the left-hand driving in Sweden, but points out that next year this will all be changed. . . . **Bill Leach** says they are selling their farm in Youngstown, N.Y., "so after this year we will quit farming in the summer months. Farm labor is almost impossible to get around here. It makes me wonder where all the poverty payments are going. . . . Except for my knee, I feel like a 'yearling.' Helen and I still have vivid memories of the fine 50th Reunion—the officers did a swell job." . . . Early in August **Francis Stern** told of going to Saratoga with Gladys to see the New Music Auditorium and hear the Philadelphia Orchestra, then to Tanglewood to hear the winners of the Mosow Music Competition take part with Boston Symphony. Later Francis sent us some old scrapbook clippings to add to the class accumulation, including a picture he took for *the Tech* in 1914 or 1915, showing the tough-looking gang that took part in the Technique Rush in back of the Copley Plaza. "A big pile-up" says Francis "and much in the way of torn shirts. Who can you spot?" Only one—we think it is Dick Lowengard, '17, but have to check. . . . Twice during the summer we had word from **Cy** and Gyps **Guething** from Boothbay Harbor, Maine, a general area where Cy says amusement is very cheap and pleasant. "For example," says he, "one has only to drop in at a bar and offer a native a beer or two and ask him questions pertaining to his native state. Then in that beautiful Maine accent one hears stories of lobstermen, fishermen, woodsmen, hunters, ship builders, and what not. Am only sorry I am not an author, could take shorthand, and spell out their pronunciation. If I could, I would endow the Institute library. Of course as usual I must mention food. Have gone on a Maine diet which starts off in the morning with native blueberries. Then during the day we have crabmeat, clams or lobsters in various forms and usually all three. They say iodine is medicinal and we are taking ours in good doses." This brings back memories of the 50th, as for example Cy and his joy with his second, or was it his third, lobster out on the lawn of the Oyster Harbors Club. More of the same on the Cape in June, Cy! . . . **Nat Warshaw** wants to know how many '16ers are active in Red Cross. Says he was literally "dragged" into it years ago when he took the Red Cross for granted. Now he writes: "Do you remember many years ago that, as a Class, we tried to figure out what we could do as a group that would be beneficial to the human race? If I knew then what I know now I would most assuredly have suggested that we all take an active part in the Red Cross." He says he is by no means an expert and never will be but "if ever an organization needed any of the talents we possess, it is this one!" For more information, call or write Nat (69 A St., Hull, Mass.).

If you want to see something different, along the line that you as an old-timer are just bound to approve enthusiastically, write to **Bill Barrett** (31 Ox Ridge Lane, Darien, Conn.) and ask him to send you a copy of American Craftsmen's Council Annual Report for 1965. The Council is now entering its 23rd year, and has had from its inception an understanding of the potentials of craftsmanship in our society. One of the problems has been to revive the acceptance by the art world of the crafts as a basic area of the total artfield. Bill is president of the Council and is very proud of its work. Read in the report about the significant steps taken in 1965. . . . We have a reprint of an article in the April 1966 Yale University Library Gazette by the curator of history records in the Stirling Library, which gives an interesting account of "Sir Winston Churchill and his Recordings." And here we see **Jeff Gfroerer** mentioned repeatedly because of his close association with Sir Winston and his Sound-Scriber machine and his gift of recordings to the Stirling Library. The article reads in part: "A recent gift of Churchill memorabilia to the Historical Sound Recordings Program at Yale provides a splendid opportunity to investigate Churchill's interest in recording. Herbert Gfroerer, retired Chief Executive and Chairman of the Board of the Sound-Scriber Corporation, has presented to the University copies of the complete correspondence, photographs, publicity, and private recordings relating to Churchill's use of his company's equipment. One of the private discs included in this material contains an impromptu recording made by Churchill on a Sound-Scriber machine in 1946. In it Churchill analyzed his use of recording equipment as a means of literary composition: 'I use such equipment not for the ordinary purposes of dictating business letters or saying things to secretaries . . . I use it actually to do composition—to put down a speech, or the outlines of some article or historical work I am writing. . . . Writing is very boring to me. The . . . action of calligraphy I find a burden and a nuisance . . . For more than forty years I've done all my work by dictation'." Read the rest of this interesting article at the reunion in June. . . . In mid-September the **Peb Stones** got back to winter quarters in Jackson Heights, N.Y. following a full summer on their own Little Beaver Island in Lake Winnepesaukee. During the summer while son and family enjoyed a vacation spell at the island cottage, Peb and Dolly debarked for the A.M.C. camp on Three-Mile Island, enjoyed prepared meals and dishwashing by others. Strangely and delightfully the water level stayed up all summer at their island, while many of us in the New York New Jersey area saw our lawns and gardens suffer from the long, long dry spell.

We are very sorry to report the death on September 11 of **Willard Brown**'s wife Alice in Midland, Mich. Alice was an enthusiastic attender of our 49th last year and had hoped to be at the 50th but her illness prevented. Willard writes: "We buried her with full military honors as a Reserve Nurse of the Navy with foreign service in World War I (at Brest, France) in Arlington National Cemetery, a lovely service in Fort Meyer Chapel with a 4-stripe Navy Chaplain. . . . The family and a number of Washington friends were there. This 3-volleys—by a Navy Honor Guard, and plaintive 'Taps'—really breaks you down. Then on Saturday, three days later, we had a Memorial Service for her at her church, the First Presbyterian in East Cleveland. There were 180 folks there which suggests how she was regarded." Our sincere sympathies, Willard.

Our monthly luncheons are now being held on first Tuesdays, at the Chemists' Club, 52 East 41 Street in New York at noon. The first one this fall was in September, and saw eight in attendance: **Walt Binger, Steve Brophy, Art Caldwell, Jim Evans, Rudi Gruber, Mac McCarthy, Herb Mendelson,** and **Francis Stern.** And on October 4th, the second fall luncheon had seven: Walt Binger, Art Caldwell, **Harold Dodge, Henry Hunter,** Herb Mendelson, Francis Stern, and **Peb Stone.** At this luncheon we reviewed some of the wonderful colored prints made from the 60-odd slides taken by Willard Brown, our official Reunion photographer. Walt Binger wants to know if you took any pictures in the robing room in Cambridge just before the Commencement exercises—if so, please let him know (1 East 42 St., N.Y.C.) And now the column closes for the time being. Many thanks for keeping the information coming in—just continue writing a little but writing often to keep the column full and interesting. If you know of any '16 illness, remember we have a supply of printed information postals from Steve Brophy for advising others who may be close to an ill '16er—just write to your Secretary or to **Jim Evans** of the '16 Good Cheer Division who is always glad to send out these helpful notices for you. And now, as the holi-

day season approaches, the best wishes of your class officers for a mer.r.r.r.ry Christmas and a happy and healthful New Year—**Harold F. Dodge,** Secretary, 96 Briarcliff Rd., Mountain Lakes, N.J. 07046; **Ralph A. Fletcher,** President, Box 71, West Chelmsford, Mass. 01863; **Joseph W. Barker,** vice-president, 45 Beechmont Drive, New Rochelle, N.Y. 10804; **Hovey T. Freeman,** Treasurer, 45 Hazard Avenue, Providence, R.I. 02906; **T. D'Arcy Brophy,** 50th Reunion Chairman, 470 Park Avenue, New York, N.Y. 10022

'17

As these notes are being written the 49th Reunion is history and our new assistant secretary, **Stan Dunning,** will report herewith as your Secretary was unable to be present. It is with much appreciation that we express our thanks to the secretaries of the classes of '15 and '16 for their expressions of sympathy in the passing of our long-time secretary on September 3rd, **Win McNeill.** Might I thank herewith Azel Mack, '15, for his effort in also trying to phone relative to the passing of their illustrious classmate and my very personal friend Herbert D. Swift, September 21st. Word eventually reached me at Rochester, New York, through efforts of a class '18 member. Further, we thank Harold Dodge, Secretary, class '16, for giving us their 50th reunion data to help shape up our 50th come June '67. Further, thanks to Jim Evans '16 for his cooperation in supplying us over the years with the New York luncheon postal notices—sorry that '16 feels it necessary to change their luncheon to Tuesdays—reason given, too many directors' meetings on Thursdays. **Jim Flaherty** writes: "About the tail-end of July I walked into a pulmonary embolism. I have been recuperating at the home of my sister in Needham and at Marshfield. Twenty-four pounds have been melted away due to my 1200 calory diet. I have to walk three times a day, shower once and no brown medicine. My big trouble was I forgot to do my push-ups." Jim, how about a monthly bulletin? . . . **Bill Dennen** writes: "I don't know when you received my doings so I'll start with the first of the year. Left home after New Year's and drove to New Orleans via Florida where we saw **L. E. Schoonmaker** of our class. Put car on boat at N. O. and sailed to Guatemala. There we saw many old friends and met with many M.I.T. alumni and their wives. Then drove to Mexico via the Pan. Am. Highway and found the El Tapon area much improved since our previous trip. In Mexico City we visited with C. M. Cornish, M.I.T. '24, and attended the M.I.T. Fiesta held at the home of Charles Davis, M.I.T. '49. After the Fiesta, took a trip up the west coast of Mexico as far as Manzanello and Mazatlan and then home arriving on April 9. In June we had a visit from our classmate **Walter Pond,** Course III. We missed Alumni Day at Tech because we went to Inidana to see our youngest son (M.I.T. '54) receive his Ph.D. in Microbiology from Indiana University Medical. Spent the rest of tne summer at the farm entertaining our grandchildren and keeping in shape by working around the place and getting ready for another trip this winter. Went to Cambridge in September to attend the meeting of Alumni Officers and the Alumni Seminar both of which had excellent programs and were well wothwhile. Each one seems better than the last. We are now looking forward to our reunion at Sturbridge and attendance at the Inauguration of President Johnson in October." How about all '17ers making their New Year's resolutions to include such a coverage so that your secretaries can get us all up to date for our 50th reunion June 9-12. . . . Seems some '17ers are still on the move—**Walter J. Beadle**'s new address is 10447 Nemours Bldg., Wilmington, Del. 19898; **Willard B. Newell,** 3219 San Nicholas Street, Tampa, Fla., 33609; **Walter C. Wood,** 3560 Talbot Street, San Diego, Calif., 92106; and **Joe Littefield,** 6080 SW 104 Street, Miami, Fla., 33156. How about sending in some news, and best in your new locations.

Our 49th reunion held at Sturbridge brought out a record crowd. Attending were the Dud Bells, Ken Bells, Penn Brookses, Phil Cristals, Bill Dennens, Brick Dunhams, Stan Dunnings, Les Fords, Loosh Hills, John Holtons, Bill Hunters, Ken Lanes, Stan Lanes, Al Lunns, Ralph Rosses, Ray Stevens, Al Sullivans, Bill Sullivans, and the Win Swains. John DeBell, Joe Gargan, Hal Perry and Helen (Mrs. Edward N.) Winslow joined us as singles so we had a total of forty-four. As usual the wives added much to the party and showed as much enthusiasm for our 50th as we men did. Old Sturbridge Village is always interesting and the fall foliage was beautiful. **Penn Books** gave us a treat by a short recounting of his association with Howard Johnson. It was warming and satisfying to hear this firsthand information of our new Institute leader. **Ray Stevens** reported on the healthy progress of our 50th Year Gift. **Al Lunn** told of reunion plans at Chatham Bars Inn, Cape Cod, and in Cambridge. From Sturbridge many of us went to the most impressive inauguration ceremony and were joined by **Tubby Strout, Ham Wood, Walt Beadle** and their wives. Time flies!! Make your plans now for next June 9, 10, 11, and 12th for your 50th.—**C. Dix Proctor,** Secretary, P.O. Box 336, Lincoln Park, N.J., 07035; **Stanley C. Dunning,** Assistant Secretary, 1572 Mass. Ave., Cambridge, Mass. 02138

'18

As men look back over their lives they hope not to find too many examples of the unlit lamp, or too many occasions when a loin went ungirded. For the last two years **Joe Kelley** has turned on his light bulbs and girded his dungarees in Peterborough, N.H. (next town north from where I live), but takes off for a little island on the west coast of Florida before the snows come to stir his chemical discontent with slippery roads and unshovelled walks. Over the telephone he didn't tell me what he does at Anna Maria, but did talk about keeping fit since leaving the vice-president's office of the Cities Service Oil Co., on Wall St. There is the lawn to mow, the garden to plant, weed, water, and ingather, leaves to rake, buildings to keep up, and odd jobs to take care of for his wife. He described it as day labor, brightened by thoughts of and visits from four children, with fourteen second generation bundles of activity and elfin charm to romp with. Because Joe attends the summer theater in Peterborough and the Amos Fortune Forum in Jaffrey, we know we have been in the same audiences several times, and so far (shame on us) have never recognized one another. . . . **Malcolm Baber** will probably want to give one of my lights a black and blue shiner for quoting all of his letter to me, all of which requires quoting in order that others among us may be stirred with an equally generous passion to go quietly on toward human perfection. "The enclosed check is to help make it possible for some classmate, less fortunate, to be with us at our fiftieth reunion. His company and happiness are more than ample return. This has been quite a year for us. On my birthday, my older boy graduated from the University of Virginia. Then his young brother graduated from Chestnut Hill Academy. Finally, I had my 50th reunion at Yale where the entire 1918 M.I.T. delegation was present: Baber, Little, and Wyer. The two latter got an enthusiastic working over on the subject of their M.I.T. fiftieth. Ed Little is an able photographer who takes excellent photos of our activities, if you can call them activities after Father Time has been at work on us for so long. Those without canes or crutches usually have a bottle of nitroglycerine tablets in a handy pocket." If class secretaries have any influence with the creator of the universe, brethren who write in without being dunned for information will be blessed by a divine sleight of hand never claimed by science. This month **Sherman MacGregor**'s name gets added to Baber's as one who does not leave a lamp unlit. Sez Sherm, "The last issue of the *Review* was particularly interesting to me because it brought back memories of things long ago forgotten. I was one of the many who played primitive men, male dancers, and the like in that far away June when the Bucentoro sailed on the Charles River. I was an Egyptian dancer, in full costume, and carefully trained in what I was to do, which—as I recall—was little except to act as background atmosphere. One thing I do recall very vividly. There were a number of girl dancers in filmy costumes, who danced on a plate of glass set into the ground, with lights under the glass, and there were some among us who were indecent (?) enough to be pleased at the revelations which took place when the lights were on. I recall the girl nearest to us as a comely lass. Ah yes, it was quite a night! And to think that it was 50 years ago. It hardly seems possible! Another item that struck me was the notice of the death of Earl Collins. He had a

special place in my memory, because of the Tech Show in 1918. He wrote much of the music, and I wrote a great many of the lyrics, so we frequently worked together. I remember going to his rooms one night. He left me to look for something. Meanwhile, seeing a manuscript on the piano, I tried it over and liked it. I asked him what it was. He said something he had jotted down as a possible tune for the show, but that it didn't seem to fit anywhere. I liked the melody. He agreed that if it had a lyric, it could be included. Half an hour later it had a lyric which, with a few revisions, went into the show. It proved to be one of the popular songs. He was a real nice guy, that Collins, and I'm sorry to hear he has gone. There is no news from me, except to say that I spent six delightful weeks in Massachusetts, New York and New Jersey this summer, getting re-acquainted with my friends and relatives, and especially my grandchildren. It was a real vacation, in which the weather man cooperated by giving us some cool days and nights. In Florida the heat was sweltering. My oldest grandson, 14, is now slightly taller than I, an Eagle Scout, and a novice guitar player. Yes, they do grow up. We hadn't seen them for three years. I'm still playing in every theater group hereabouts. Did *The King and I* and *Finian's Rainbow* last spring, and am now doing *Camelot* for the first show of the fall season. Maybe it doesn't pay in coin of the realm, but it's fun and keeps me from realizing how old I am!" . . . **Frederick Norton** first girded up his loins after graduation as a physicist for the National Advisory Committee for Aeronautics (now NASA). After that he directed research for refractories with Babcock and Wilcox who were seriously interested in seeing how far they could overheat water in a boiler. Then for thirty-three years he headed the Ceramics Division of the Department of Metallurgy at the Institute, retiring in 1962. Last May he was made an honorary member of the American Ceramic Society in recognition of his professional eminence and achievements. He joined the Society in 1923, was made a Fellow in 1937, vice-president in 1960, and served as a trustee of the Ceramic Educational Council 1950-53. In 1961 he received the Design Division Award, which is given annually in recognition of a major contribution to ceramic art and design in America. He was named the recipient of the 17th Albert Bleininger Memorial Medal and Scroll in 1964. Honorary doctorates were conferred upon him by Alfred University in 1949 and by the University of Toledo in 1954. In 1958 he was made an honorary member of the British Ceramic Society. He is a member of the National Institute of Ceramic Engineers, a Fellow of the American Physical Society, and a member of Sigma Xi. That, we submit, is doing a lot of authentic girding. **John Kilduff** and **Tom Kelly** were supposed to drive around my bailiwick in early September, but the best laid plans of so delicious a scheme, never matured.—**F. Alexander Magoun,** Secretary, Jaffrey, New Hampshire 03452

'20

Present at the Inauguration of President Howard Wesley Johnson were Beth and **Ed Ryer,** Florence and **Lee Thomas,** Mina and **Perk Bugbee,** Betty and **Al Burke,** Irene and **Bat Thresher,** your Secretary and his Amy. In the large gathering at this colorful and auspicious occasion there may have been other classmates who escaped my eye. It was especially pleasant to have a good visit with Florence and Lee, whom we had not seen for some time. They looked very well indeed and appeared to be enjoying life to the full. Representing M.I.T. at another recent inaugural, that of the fifth president of Upsala College in East Orange, N.J., was **George Des Marais.** Wish we could have seen you in your cap and gown, George. . . . **Tom Orchard** has left Cleveland Heights and is back in Providence, R.I., address 73 Sea View Ave. Hope this means we get to see something of you, Tom . . . **Archie** (Toots) **Kinghorn** is in St. Petersburg, address 1873 Dolphin Blvd. . . . **Ed Zahn**'s present address is Paradise Lane, Halifax, Mass. . . . **John Lynch** has joined the growing number of classmates in Florida. He now resides at 139 Gregory Place, West Palm Beach. . . . **Shirley Leighton** is in Nyack, N.Y., address South Blvd., Upper Grand View. . . . Dr. **Henry S. Simms**' new address is Rockleigh Rd., Rockleigh, N.J. . . . **Ed Rich** is in Wellfleet, Mass., address Ryder Court. . . . Sadly, I have to report the death of three distinguished and beloved members of the class. **Edmund G. Wilson** of 7 Charlesbank Rd., Newton, Mass., died in September, 1965. . . . **Ned VanDeusen** of Julian, Calif., passed away on September 28. Ned had come on for the last two class reunions and contributed much to the success of those occasions. His warm and cheerful spirit was appreciated by us all and we shall miss him sorely. . . . Cac Clarke, Secretary, and Ted Steffian, Assistant Secretary, of the class of '21 thoughtfully provided a Mississippi newspaper account of the death of **Bill Freeman** last May. The paper says, "Bill Freeman's friendly personality and interest in people had gained him many friends in Mississippi and Louisiana since moving to his Runnymede Plantation from Virginia," Bill served in the U.S. Navy in both world wars. He retired as a Captain, U.S.N.R., and received the Navy Commendation Medal for outstanding performance of duty as assistant chief cable censor in World War II. He also served as assistant director, Project Administration, Division Defense Materials Service, for which he received the Meritorious Service Award. He was a member of the Board of Directors of the American Tung Oil Association, president of the Tung Research and Development League, on the Board of the National Tung Oil Marketing Co-Op., and a director and treasurer of the Pearl River Valley Country Club. He is survived by his wife, Virginia, a daughter, a son and nine grandchildren. Bill was a credit to his class and one of its most popular and affectionately held members.—**Harold Bugbee,** Secretary, 21 Everell Rd., Winchester, Mass.

'21

This issue of the *Review* winds up the recording of our 45th anniversary year on the same high note that has been maintained all year right through our historic reunion, Alumni Day and the fall events in Cambridge. We can now report that Howard Wesley Johnson, formally adopted as a member of the Class of '21 at Alumni Day, was inaugurated as the twelfth president of Technology at ceremonies in Cambridge on October 7, 1966. News should now be in your hands, via a letter from class prexy **Ray St. Laurent,** to the effect that '21 will celebrate the 50th anniversary of its formation in 1917 with an interim reunion at the Fiesta of the M.I.T. Club of Mexico City on March 9-11, 1967. You and your wife are invited to be there. **George Chutter** and his 50th Reunion Committee are already formulating the program for the ultimate in reunions—a Must for you in 1971! Your Secretary is undertaking to produce a special class directory in advance of that event. The questionnaire you received earlier this year will serve as a basis for the directory and we ask your cooperation in completing and returning it at once if you have not already done so. We'll need help from everyone to produce a complete and accurate record, so prompt replies will be sincerely appreciated. But don't wait to be asked; return the questionnaire now and save us time and postage. **Philip R. Payson** has a new home at 5031 Northampton Dr., Ft. Myers, Fla. 33901. He retired on January 1, 1964, as the Cleveland district manager of SKF Industries, Inc., after 40 years in engineering and sales of ball and roller bearings. He says, in a welcome note: "You still write more than any other class secretary—you must have a secretary! Sorry we did not get to the reunion. After 35 years, we sold our home in South Euclid, Ohio, and arrived in Ft. Myers on June 30 with all our furniture. We have moved into a new home in the Tanglewood section, about four miles out royal-palm-studded McGregor Blvd. Last October, Marion's nephew, Dr. Richard C. Gilman, was inaugurated President of Occidental College in Los Angeles. [Phil: We reported in the Review for January, 1966, that our classmate and Honorary Secretary of M.I.T., **Sam Lunden,** was the representative of Technology in the academic procession and inaugural ceremonies—Cac.] We flew out for the occasion and then went to San Francisco to stay with **Paul** and Ruby **Hanson.** Sorry to tell you that Paul went to the hospital last summer and can now be reached via P.O. Box 140, St. Helena Sanitarium, Calif. His son, Paul, Jr., was married earlier in the year. Best regards. Phil." The Paysons have two daughters and three grandchildren. Beverly is married and lives in Natick, Mass. Audrey teaches in South Euclid, Ohio. . . . We assume that **W. Robert Barker** has re-

tired. We have had address changes this year for his moves from Lockport, N.Y., to Baltimore, Md., to Englewood Cliffs, N.J., and now to 5755 Beattie Ave., Lockport, N.Y. 14094. Wish Bob would return that questionnaire form with a note on his current activities. . . . **Edward W. Noyes, Sr.,** has made his usual winter trek from his home in Thompson, Pa., to 1410 S.E. 7th Ave., Pompano Beach, Fla. Ed retired in 1960 from the Chicago Pneumatic Tool Co. He and Kathryn have four married children and sixteen grandchildren. . . . **Robert S. Cook** has left his summer residence in Canandaigua, N.Y., and is spending the winter at 633 Royal Plaza, Ft. Lauderdale, Fla. 33301. Bob retired in 1954 from the New York State Highway Department. . . . **Eugene A. Hardin** has moved from the Baton Rouge, La., district office to the headquarters of Parsons Brinckerhoff, 165 Broadway, New York, N.Y. 10006. We'd like to have Gene's questionnaire and some news in explanation of this change as a holiday gift to share with you. How about it, Gene? . . . **George** and Anne **Schnitzler** have by this time completed their usual journey from Chestnut Hill, Mass., to their winter home at 1932 N. Michigan Ave., Miami Beach, Fla. 33139. George retired five years ago as a physicist for the National Bureau of Standards in the inspection and testing of incandescent and gaseous discharge lamps. The Schnitzlers have a married daughter and two grandchildren. . . . **Robert F. Miller,** our class photo-historian, spent a delightful day with Maxine and your Secretary on his way from a vacation in New England to his new home in McLean, Va. We enjoyed a sightseeing trip around the shore area and a good opportunity for unhurried discussion of our respective families and our '21 friends. Bob had attended the Alumni Officers Conference in Cambridge and the 50th Reunion and 50-Year Gift Committees of the Class of '21. We tried to get Munnie and Alex Hawes of Sea Girt, N.J., to join us, but they were out of town. Bob brought the excellent set of color slides he had made at the Reunion and at Alumni Day. If you're too impatient to wait until 1971 to see them, come visit your Secretary in the meanwhile. Thanks, Bob . . . Mac and your Secretary attended a meeting of the M.I.T. Club of Northern New Jersey which was addressed by Institute Professor C. Stark Draper '26. Also in attendance were **Joe Wenick** and **Sumner Hayward**. We've been privileged to read Betty Hayward's interesting "Once Over Lightly," an unusual account of their five-week trip to England and Scotland last spring. Of the theatre, she says: "It was a treat to see more plays in London—good plays—than we've seen in New York for many a day." [They saw six.] "We sought the waterfront in Plymouth, where the Mayflower last docked before anchoring, 66 days later, in what is now Provincetown harbor. The first mail is delivered in time to read it at breakfast. While America might well imitate Britain in some respects, the reverse is equally true." . . . **Joe Wenick** had to return home directly from Groton because he had been called for jury duty, despite "an appointment made 45 years ago," as he put it. It now develops that he was the foreman of a seven-member jury. The New Jersey Supreme Court has urged lower courts to experiment with six-member juries to save time in selection, but Joe's was the first in which a panel of seven was used. . . . At a meeting of the New Jersey representatives of the M.I.T. Educational Council, **Joe Wenick, Sumner Hayward** and **Cac Clarke** represented three of the ten districts as vice chairmen . . . **Munroe C. Hawes** of 320 Boston Blvd., Sea Girt, N.J. 08750, underwent surgery during the summer. We are glad to report he is back at his golf and occasionally at his busy real estate and insurance business, Hawes and McAfee, Inc., Manasquan, N.J. 08736. . . . **Edmund G. Farrand,** our hard-working Class Estate Secretary and Class Agent, writes that he and Helen have purchased a home high on a hillside in LaJolla, Calif., overlooking that city, San Diego, and the ocean. They will thus be much nearer their son, David, the avid fisherman of our 20th Reunion. The Farrands expect to occupy their new home some time early in 1967, but mail should continue to be addressed to them for the present at Kinchafoonee Lodge, Leesburg, Ga. 31763. Ed has sent a picture of the lovely area to which they will move. As usual, he heartily addresses himself to his Class Agent and Estate Secretary tasks, which you well know from his most sincere letters. He is elated by your generous response and dedicated more than ever to set a new mark in 1971 with another record-breaking gift, to add to the record we established in 1961.

Ray and Helen **St. Laurent** were hosts to **Sam** and Leila **Lunden** of Los Angeles, Calif., and **Ed** and Maida **Dubé** of Reading, Mass., in most enjoyable reunions at their home, "Saints' Haven," Vinalhaven, Maine. Ray reports aiding Professor Minor White of the Institute's Department of Architecture in the possibility of setting up a photography workshop on Vinalhaven Island to be used in the spring by architecture students in Professor White's creative photography course. The Saints were invited to the October 7 ceremonies marking the inauguration of Dr. Johnson as President of M.I.T. Ray says that **Bill Sherry** was in the academic procession in his capacity as vice-president of the Alumni Association. Other invited guests included Ed and Maida Dubé, Irv Jakobson and Sam and Leila Lunden. Following a trip to Nova Scotia, Ray and Helen closed their Vinalhaven home and have returned to 47 Gerard St., Manchester, Conn. 06040. . . . Through the kindness of Harold Bugbee, Secretary of the Class of '20, we have the following notes he prepared so well: "Dr. **Ivan F. Chambers** and his wife, Grace, are happily retired and living at 237 Colville Rd., Charlotte, N.C. Trotsky has had an outstanding career in the chemical industry. **Harry P. Junod** retired at the end of 1965 but continues as chairman of the executive committee of Pickands Mather and Company, Cleveland, Ohio, of which he was a partner. He recently completed a term as chairman of the National Coal Association. He and Mrs. Junod and their son live in Shaker Heights, Ohio. **Albert E. Smith,** who entered the Institute with '21 in 1917 and is now listed as '22, is with Central Maine Power Company. Spud and his wife Ethel live at 10 Brooklawn Ave., Augusta, Maine. **Herbert W. Smith** is also listed with '22 although he started with '21. He is in the restaurant business at 60 N. Main St., Fall River, Mass., where he has been located for more than thirty years. **Marshall H. Winchester,** 124 Seymour St., Windsor, Conn., retired in 1962 from the Travelers Insurance Company's engineering and loss control division. Windy had a heart attack in 1964 but reports he is on the mend although he still has to take it easy." Thank you, Harold. We have written to Harold expressing the sympathy of all of us in '21 on the passing of William Morton Breaky Freeman, '20, who was associated with '21 and well remembered by some of us as a most considerate, hard-working and friendly member of the managing board of *The Tech*. A retired navy captain, Bill owned the Runnymede Plantation in Poplarville, Miss.

It was great to receive a phone call from **Jackson W. Kendall,** 401 Hermosa Pl., South Pasadena, Calif. 91030, just before our 45th Reunion, but we regretted to hear his news that he and Marge would not be able to attend the June events, despite all their planning. The good news was the arrival of a new grandchild, bringing their total to seven. The Kendalls celebrated their 40th anniversary with an extended trip to Alaska, first driving to Seattle, Victoria and Vancouver and taking the cruise from there to Juneau. They flew to Skagway and White Horse, where they mailed us the attractive souvenir card of all Canadian commemorative stamps for 1965. A post card from that point says, in part: "What a trip! Climax after climax! We drove to Seattle via Olympic and Mt. Rainier Parks. Then the inside passage—whales —icebergs— porpoises— seals —glaciers! Biggest climax so far: Sitting with the pilot in an eight-passenger, twin engine, Grumman amphibian on the flight over the ice cap from Juneau to Skagway. We'll never forget that hour over glaciers and 6500-foot jagged peaks. Then we went over the White Pass on the 104-mile White Pass and Yukon narrow gauge line, following the trail of '98—another climax." They next flew to Fairbanks for the river trip and a visit to Mt. KcKinley and Anchorage, flying back to Seattle. Prior to the trip, Marge and Jack had vacationed at Palm Desert, near Palm Springs, and had spent a few days in San Diego at the California Moving and Storage Association convention. Jack reports that they are both well and most sorry not to see all their friends at Groton and Cambridge. We also acknowledge Jack's generosity in sending us the latest Government publications on U.S. postage and duck stamps. Our sincere thanks and good wishes go to Jack and Marge. . . . **Frederick N. Morgan** has a new business address: General Services Administration, U.S. Government, Room 711, U.S. Post Office and Court House Bldg., Boston, Mass., where he is engaged in design and construction duties. Fred was formerly in charge of

maintenance for National Airlines in Miami, Fla. . . . "Ondine," a 57-foot cutter built by **Irv Jakobson** at his Oyster Bay, N.Y., shipyard, is in the news again. This time she won the 3600-mile yacht race from Bermuda to Copenhagen, Denmark, bearing out Jake's remark that she usually wins and has never failed to place in a yacht race. . . . A much-appreciated note from **Arthur G. Wakeman,** 130 Limekiln Dr., Neenah, Wis. 54956, says: "I retired in 1963 as vice president and director of Kimberly-Clark Corporation of Neenah and have traveled around the world four times since then for the U.S. Department of State. I am also a director of several companies." The Wakemans have a married daughter and two grandchildren. . . . **Ralph S. Wetsten,** who retired in 1961 as illumination engineer of Public Service Electric and Gas Company, Newark, N.J., writes from his new home at 155 West 68th St., New York, N.Y. 10023: "Dear Cac: After having resided for many years in the good State of New Jersey, Ruth and I decided to pull up stakes and move to New York City where we could enjoy the many advantages offered by the metropolis without having to make those time-consuming trips back and forth. We chose an apartment within sight of Central Park and within short walking distance of the Lincoln Center for the Performing Arts. As you know this is comprised of Philharmonic Hall, the New York State Theater, Metropolitan Opera House, Library-Museum, Vivian Beaumont Theater and the soon to be completed Julliard School of Music. We had planned to attend the Reunion but were so involved in getting settled that we had to forego the pleasure of being with our classmates. I hated to miss seeing the boys and I have fond memories of the Griswold from my boyhood days in Connecticut. Please give my sincere regards to my classmates and especially to members of Hexalpha. With most sincere good wishes. Ralph." Their many friends in Course VI-A, of which we are an honorary member, all missed Ruth and Ralph and hope they'll be sure to attend in 1971 and perhaps during intervening Alumni Days. . . . **H. duPont Baldwin** has moved from Baltimore, Md., to 143 Charles St., Annapolis, Md. 21401. Wish Baldy would complete and return that '21 questionnaire so we could share his news with his friends in the class. . . . **Alfred H. Fletcher** lives at 22 East Welling Ave., Pennington, N.J. 08110. He is Director of the Division of Environmental Health for the N.J. State Department of Health in Trenton, N.J. . . . **John N. Worcester,** a partner in the firm of Sullivan and Worcester, reports a change in their business address to 225 Franklin St., Boston, Mass. 02110. How about returning that questionnaire, John, so we can include some up to date information? . . . **Norwood P. Johnston** reports a move from Pinehurst in our old home state of North Carolina. He can now be addressed at P.O. Box 414, Marietta, Ohio 45750. Please return the questionnaire you received, Norwood, to help us continue this column and to prepare the forthcoming class directory! Thanks . . . **A. Ilsley Bradley** has a new home address at Suite 317, 2300 Overlook Rd., Cleveland Heights, Ohio 44106. He heads A. I. Bradley and Company, realtors and appraisers, 326 Bulkley Bldg., 1501 Euclid Ave., Cleveland, Ohio 44115. He is president of the Society of Real Estate Appraisers and has written for its monthly publication. He is a land agent, Cuyahoga County Engineer's Office, and serves as treasurer of the Traders Club. His memberships include the University Club and the Pine Ridge Country Club. Besides golf, Ilsley says he indulges in "barber shop" singing with the S.P.E.B.S.Q.S.A., he bowls and also enjoys ice skating. . . . **Edward P. Clark** says he now lives on South Bristol Rd., Damariscotta, Maine 04543, but he didn't return the questionnaire to give an account of his activities. Please send it pronto, Ed! From all of your class officers and committeemen to you and yours: The best of happy holiday greetings! To make the holidays happy for your Secretaries, please include some news or the class questionnaire with your greeting card to them! Our sincere thanks for your help. —**Carole A. Clarke,** Secretary, 608 Union Lane, Brielle, New Jersey 08730; **Edwin T. Steffian,** Assistant Secretary, c/o Edwin T. Steffian and Associates, 19 Temple Place, Boston, Mass. 02111

'22

It is early to wish you all a merry Christmas on this warm, sunny October day in Buffalo, but consider yourselves properly greeted, as well as best wishes for the new 45th Reunion Year of 1967. Your Secretary is up to his ears as president of the United Fund and will give you the happy results in the seven plus million category at the Victory Dinner in November. **C. Yardley Chittick,** of Russell, Chittick & Pfund, has announced the move of their offices to 225 Franklin Street in Boston, aided by four other attorneys in the firm—just to give the telephone operator a long answering statement. . . . Mrs. **Martha Munzer,** Mamaroneck, N.Y., was chosen as the honoree at the "Salute to Women" luncheon sponsored by Republican Women in Industry and Purchases. She was selected for her individual accomplishments in the fields of science and conservation. Governor and Mrs. Rockefeller joined the group at the reception in the New York Hilton Hotel and the Governor participated in this unique tribute as the only speaker. . . . A clipping from *Science* quotes from **Eric Hodgins'** letter criticizing an article on M.I.T. Eric has done considerable research in the past about the Institute and has written in *Fortune* rather extensively on his Alma Mater. He knows and many others surmise. . . . **Rupert S. Carven, Jr.,** retired this summer after nearly 40 years of service with Humble Oil and Refining Company. He was Humble's fuel oil sales and research manager in New England. There were several presentations, including a diamond-studded 40-year service pin, a color TV set and a Bermuda trip. . . . **Everett M. Strong,** Professor of Electrical Engineering at Cornell University and Chairman of it's co-operative program with industry, has been selected to receive the 1966 gold medal award of the Illuminating Engineering Society. It is one of the highest honors in the lighting profession and is made "For the purpose of giving recognition to meritorious achievement which has conspicuously furthered the professional art of knowledge of illuminating engineering." Professor Strong was born in Portland, Maine, and is a registered professional engineer in New York. He is a consultant in the lighting field, author of technical papers and a text book, and has served on many committees for research in the program of light and vision. . . . **Marion S. Dimmock,** has now retired as an architect in New Britain, Conn. He has written to the Institute regarding his wanderings during the design and construction of the Jerusalem YMCA. He tells in a most interesting way of the ornamental carvings and inscriptions for the complicated stone work of the large and small domes at the top of the tower. He also worked out the inscriptions carved in stone over each of the four balconies near the top of the tower and of the decoration of the interiors including the huge domed auditorium. Your Secretary has admired this building externally and hopes to climb the tower next April. Thank you, Dimmy, for the news. . . . We were thrilled by the 1966 Alumni Fund Bulletin listing the class of 1922 as the leader of all classes in largest amounts and also the leader of classes 26 to 49 years graduated. Our contributors numbered 266 from 44% of the class. We are indebted to you all and especially Class Agent, **Dale Spoor** of Richmond. We were delighted to hear from Mrs. Royal A. Stone, to whom we confirmed the dates of the 45th Reunion as June 8 - 12 at the Wianno Club at the Cape. The sympathy of our class is extended to the family of **Arnold E. Howard** of Chelmsford, formerly of Lexington. Arnold had been Chief of Recreation with the State Department of Natural Resources. We also send sympathy to the families of **Sigmond Cohen** of Michigan, Capt. **Harold J. Chapman** of Palm Springs, Calif.; Col. **Robert S. Barr** of Denver, Colo.; **Horace B. Ambler** of Natick, Mass.; and **Frank P. Coombs,** Centerville, Mass.

PHOTO: FABIAN BACHRACH

E. M. Strong, '33

Among the new addresses received: **G. Dewey Godard,** Marblehead; Col. **Dabney H. Maury,** Paoli, Pa.; **Larence R. Culver,** Melbourne, Fla.; **John O. Bower,** Shelbourne, Nova Scotia; **George W. Dakin,** Greenland, N.H.; **Waller V. Morgan,** Lakeville, Conn.; **Van Dorn C. Smith,** Port Washington, N.Y.: **Lee D. Warrender,** Port Washington, N.Y.; **Lester A. Williams,** Silver Spring, Md.; Col. **Olaf P. Winningstad,** San Leonardo, Cal.;

Irwin B. Cassidy, Westfield, N.J.; **Ray C. Burrus,** Hallandale, Fla. Remember to call on **Frank Kurtz** our Vice-president for Florida when passing through Del Ray Beach and be careful at the bridge table or on the tennis court—**Whitworth Ferguson,** Secretary, 333 Ellicott Street, Buffalo, N.Y. 14203—**Oscar Horovitz,** Assistant Secretary, 33 Island Street, Boston 9, Mass.

'23

The following classmates attended the Seventh Alumni Officers' Conference at M.I.T. on September 9th and 10th, 1966: **Forrest F. Lange, Milton E. Parker, Harold C. Pearson, Thomas E. Rounds, Jr.,** and **Howard F. Russell.** In addition to being brought up to date on where M.I.T. is going, we had an inspiring address by Mr. Howard W. Johnson, President of M.I.T., and interesting historical remarks by Mrs. Karl T. Compton. We also attended the dedication of the new Harold Whitworth Pierce Boathouse on the Charles River. The professor who gave the lecture on "Transportation in the 1980's" at the last meeting of the M.I.T. Club of New Hampshire began his talk by saying, "they have not started the construction of any new buildings at M.I.T. for a week." Things have progressed so much in the last few years that, should you visit M.I.T. after a relatively long absence, you will need someone to guide you and explain the new advanced methods of teaching. Most significant to your Secretary is the fact that you will find freshmen and graduate students working on projects together. I believe that you will find many improvements in the new *Technology Review*. In this connection your Secretary would appreciate your bringing him and your classmates up to date by sending information on your past, present and future activities. The editor has informed us that good sharp photographs are now desired. It is planned to use them in the Class News section. (They cannot reproduce pictures from printed magazines, since superimposing one screen upon another usually renders the result unprintable.) The editors are not sure how many, or which photographs they can use. That will depend on the amount of type they have and the relationships between photographs which must be combined into attractive layouts. However, just bear in mind that your Secretary would like news from you—with or without photographs.

D. G. Brinton Thompson, 34 Sunset Farm Road, West Hartford, Conn., represented M.I.T. at Dr. Holland's inauguration at Hobart and William Smith Colleges on October 8. . . . **W .E.** (Bill) **Gladdings,** Manager of E. I. duPont de Nemours & Company plant at Kinston, N.C., retired October 31 after 41 years and seven months of company service. A native of Newport, R.I., he received both his B.S. and M.S. in Chemical Engineering at M.I.T. He began his DuPont career in 1925 with the former DuPont Rayon Company in Buffalo, N.Y. In October of that year he was sent to Europe with a group studying rayon production methods. Upon his return in 1926, he was made a shift supervisor at the Buffalo plant, advancing to assistant area supervisor two years later and area supervisor in 1929. Three years later Gladdings was transferred to the Old Hickory, Tenn., rayon plant and remained there in supervisory positions until 1935 when he went to the rayon plant in Richmond, Va., as chief supervisor. In 1941 he was transferred to the new Martinsville, Va., nylon plant as manufacturing superintendent and the following year was made plant manager. He went to the Seaford, Del., nylon plant in 1945 as plant manager and the following year was appointed director of nylon production, with headquarters in Wilmington, Del. In 1948 he was made personnel manager for the Nylon Division and in 1951 was named manager of the Kinston Plant, taking up residence in Kinston in December, 1952. Since coming to Kinston Gladdings has functioned in various civic and public activities. For the past seven years he has served as chairman of the Lenoir County United Fund and Carolinas United. He served for three years on the Advisory Council for the School of Engineering, N.C. State University, and for several years on the N.C. Engineering Foundation of N.C. State. He also served for a time as Director of Atlantic and North Carolina Railroad. He has been a member of the Economic Stabilization Task Group of the N.C. Emergency Resource Planning Committee, having been appointed to this assignment by Governor Dan Moore, and is a member of the Board of Directors of the North Carolina Citizens Association. He is on the Board of Directors of the Kinston Country Club. Gladdings is married to the former Margaret F. James of Newport, R.I., and they have one daughter, Mrs. Hope Shackleford, of Kinston. Mr. and Mrs. Gladdings live at 1301 Country Club Road and plan to make Kinston their home. . . . Word has been received from the Alumni Office of the death of the following, but no details are available at this time: **William H. Harding,** 5 Spring Hill Road, Westport, Conn., on July 5, 1966. . . . The Alumni Office advises of the following changes of address: **Samuel M. Hamill, Jr.,** 2611 Handasyde Ave. Cincinnati, Ohio 45208; **George J. Leeds,** 53 Park Place, New York, N.Y. 10007; **Edward McSweeney,** 205 East 63 Street, New York, N.Y. 10021; **Harry S. Nanejian,** 4 Pomander Walk, Nutley, N.J. 07110; **John W. Ogg,** 740 South Alton Way, Denver, Colorado 80222; **James A. Pennypacker,** 1327 Ocean Avenue, Apartment B, Santa Monica, Calif. 90401; Max W. Tetlow, New London, N.H., 03257; **Lawrence J. Tracy,** 21 Garfield Road, Belmont, Mass. 02178; **Richard M. Watt, Jr.,** Sadenburg Thalmann & Company, Room 300, 25 Broad Street, New York, N.Y. 10004; **Stearns H. Whitney,** 46 Albin Road, Concord, N.H. 03301; **Harold M. Wood,** 2200 Scottwood Ave., Toledo, Ohio 43620—**Forrest F. Lange,** Secretary, 1196 Woodbury Ave., Portsmouth, N.H. 03801; **Bertrand A. McKittrick,** Assistant Secretary, 78 Fletcher Street, Lowell, Mass. 10852

'24

You will read elsewhere in these pages of the big do for President Johnson at New York's Philharmonic. It was an eminently successful and gala affair. We were represented by **Bill Correale** (he was on the committee), **Abe Cushman, Pret Littlefield, Nate Schooler, Sox Kinsey, Griff Crafts, Gordon Billard,** and maybe others who got lost in the crowd, all with appropriate wives. And that, by the way, includes Mrs. Billard. The only information that has come this way is from one of our most reliable correspondents, a single line, "I assume you know all about Gordon Billard's marriage". The assumption was wrong. Hope for more details later. . . . The City of New York building code has been wrapped up at last, and Bill Correale got off on a belated vacation. "Expect the fireworks will now start until it is adopted." The Cardinals and Crafts also had a late October vacation. They were in Florida attending a meeting of the Drug, Chemical and Allied Trades Association. Paul had not quite recovered from an attack of shingles, but probably nothing could keep him from one of these junkets. To keep the record up to date, grandchild number 18 is on the way, "and we suspect number 19 could be too". A note of uncertainty there. . . . **Scoops Reinhardt** had an article in the *U. S. Naval Institute Proceedings* recently. Along with it went a profile that will be of interest. "Colonel Reinhardt commanded an Engineer Combat Group in Europe during World War II. Among his postwar assignments were G-4 of the First Provisional Logistical Command in Germany, and Engineer, Berlin Command. He was Director, Department of Military Art, Engineer School, Fort Belvoir when, in 1954, he retired at the completion of 30 years of service. The author of three books and many magazine articles, this is his seventh in the Proceedings. He is a Research Engineer for the Rand Corporation, Santa Monica, California." So now you're up to the moment with Scoops. . . . A "happy retirement" note from **Chris Conway** says that he has some time to go before his retirement from AT&T. But . . . he and Mary had an Easter vacation in Palm Springs, Calif.; in July they were in Maine; in November they were to go to Louisiana and Florida for Thanksgiving week. With that sort of a program, who needs to retire! And while we're on the subject of travel: Peg and Pret Littlefield had a month's auto trip through Spain and Portugal last spring. Pret reports further, "This morning I rode in on the train (to N.Y., that is), with **Alden Cushman.** As an international banker he has been in London, Paris and Dublin taking care of affairs of the pocketbook. He told me that **Gib Cowan** had recently spent a month in Spain." . . . Professor **Sam Shulits** left his ivy-covered walls this summer for a month in Germany. It was no vacation. He gave several lectures on hydraulics, then made a study of water supply methods. Sam, you may remember, is something of an authority on the hydrodynamics of the Rhine. . . . **J. Adalberto Roig**'s busy season is December through

June, when the sugar cane crop is being harvested. However, he was able to lay down his machete for a bit to engage in his real love, light tackle fishing. Last January he participated in the Masters Tournament in Palm Beach, then in May he took part in two tournaments at Cape San Lucas in Lower California. ". . . in Mexico we fished 20 pound test line for striped marlin weighing up to 200 pounds. It is quite an exciting sport for these big ones. Our team, Humacao Angling Club, finished third in one tournament, eighth in the other." And with his busy season over, Al headed for Venezuela in September for another tournament "to try and catch as many white marlins as possible". . . . **Royce Greatwood**'s business affairs usually take him to either Canada or the Far East. "I visited Japan in March to ride on the new 125 m.p.h. train that runs between Tokyo and Osaka. It seems astonishing to find such speeds in Japan when we have nothing like it here. [Maybe you know that M.I.T. has a major project going on high-speed surface transportation. Also that it has been announced that a 160 m.p.h. vehicle is planned to be in operation between Boston and New York by next spring—though it hardly seems possible to this longtime NYNH traveler that it can be done over that roadbed.] Japan seems to be forging ahead in the industrial field at a tremendous rate. I talked with naval architects who were designing six 276,000 ton tankers for bulk carriers of New York. I was also informed that studies have been made for ships running up to 500,000 tons. It would seem that the U.S. is beginning to sink as far as big ships are concerned. There are few harbors that can accommodate them." Royce also reported having seen **Hank Simonds** on occasion. His son is at Stanford and hit the Dean's list and two scholarships his first year. From the time Charlie was a small boy Hank took him camping and fishing at every opportunity, and evidently the outdoor life appealed. Last summer he worked for the Idaho Forestry Department as a parachute fire fighter! . . . Two newly established chairs at M.I.T., in chemical engineering, are being filled by your classmates. **Tom Sherwood** holds the Lammot duPont Professorship; **Hoyt Hottel,** the Carbon Petroleum Dubbs Professorship. Tom's specialties are fluid flow and mass transfer, while Hoyt's are combustion and solar energy. A high honor, and well deserved, for each of them. . . . **Carl Muckenhoupt,** whose degrees were in electrical engineering and mathematics, is on the faculty at Northeastern. Last spring in a radio series called "Northeastern Faculty Talks", Carl filled two of the spots. His subject: "Water". . . . One last business note: **Kenneth B.** (Ike) **Walton** has run Kent's Restaurant and Baking Company, in Atlantic City for many years. Now he's added a new division, "Kent's Gifts", a variety mail order business. Just in time to reap the Christmas harvest. Which brings us to the pleasant task once again of wishing you a most enjoyable Christmas and New Year from all of your class officers.—**Henry B. Kane,** Secretary, Lincoln Center, Mass. 01773

'25

Two events in September found a number of our classmates on the M.I.T. campus. The Alumni Officers' Conference brought together **Sam Spiker, Ave Stanton, Ed Kussmaul, Chink Drew, Rick Wheeler** and his wife, and your Secretary. In addition to attending the many events scheduled, some preliminary planning for the 45th Reunion was undertaken; and, hopefully, something can be reported in the near future. Among those attending the Alumni Seminar which followed the Officers' Conference was **Bill Asbury,** and it was a pleasure to spend some time with him. He reported that **John Campbell, Jim Howard** and **Karl VanTassel** were at the Seminar, but our paths did not cross. . . . Although it has already been reported in another section of the *Review,* in order that his classmates may be well aware of the fact, **Ralph Gow** who is President of the Norton Company, Worcester, Mass., was named "Chevalier de L-Ordre National Du Merite" and was presented the Medal of the Order by the French Government at special ceremonies held at the Norton Plant. The Medal, created in 1963, is awarded for distinguished service to France; and Ralph received it in recognition of his personal contributions to French industrial growth during the time he was in France, back in 1930 to 1934, and in recognition of his subsequent continued interest in that country. . . . On several occasions, mention has been made of **Mary Morrison Kennedy**'s activities with the Sheraton Hotel System. Two interesting articles appeared during the summer months, one in the *Boston Globe* and one in the *Boston Herald,* concerned with her activities. One article was entitled "Mary Kennedy: One-Woman Stylist for Vast Sheraton Empire"; the other carried the heading " 'TOP HATS' Win Salute of Business Women." Many of you may have read one in a series of articles in the *Boston Globe* last spring which featured **Maurice T. Freeman** who serves as President and Treasurer of Loomis-Sayles & Company, Inc., who among other things take on portfolios with the idea of making them prosper. Besides managing this portfolio and that, the company also serves as investment counselor to Loomis-Sayles Mutual Fund, Inc. Maurice is President and Director), Loomis-Sayles Canadian and International Fund (same jobs), and Loomis-Sayles Capital Development Fund, Inc. (same). . . . There are two other items of interest. Word just happened to reach your secretary that **Victor Allen** and his wife have left for a trip around the world, planning to return in June of 1968. . . . In early October, a picture appeared in the *Boston Herald* of the various officers of the Massachusetts Funeral Directors Association, with an indication that **Fred Dolan**, who was in the center of the photograph, will be this Association's president for the coming year. . . . Word has only recently reached us of the death of **Alfred L. Sherman** in December 1962. Al had been in Cuba for a good many years, and no word had reached us since Castro's regime had taken over. For a number of years prior to his death he had been doing mining consulting work, with his home location in Bayamo, Cuba.—**F. L. Foster,** Secretary, Room E19-702, M.I.T., Cambridge, Mass. 02139

'26

Since Tom Pitre has moved back to town, the Fo'Castle is vacant and it seemed to be a good idea to go over there and write the December notes. A friend loaned me his tape recorder recently so I took it along and started listening to the recordings of our reunion banquet made by **Eliot Bidwell** and **Tom Green.** It seemed to offer background and conditioning for writing the notes. It wasn't a good idea at all. I became so interested in listening to the recording that I have already used up the time I allotted for writing the notes and have not finished listening to the first tape. I shall leave the recorder over here, however, because it is an ideal spot to listen, play back and listen some more to this memorable evening. Eliot and Tom made me the custodian of the recordings, and if any of you would like to borrow the two reels, I'll send them to you. The recordings are on ¼" polyester tape and are mono. Time out—the assessors have just paid a visit in response to my request for an abatement, and such a visit can be a bit distracting so we will put the notes aside and pick them up when things quiet down a bit.—We are having a rough time getting out of low gear this beautiful Sunday morning—Indian Summer can do that to you—but we will try again as though nothing had happened. You will recall that **Jim** and Liz **Killian** were unable to make it out to Pigeon Cove at reunion time because of commitments in Cambridge. A couple of weeks ago they were able to pick up their "rain checks" and came out to dinner along with Class Agent **"Pink" Salmon** and his wife Mary. The night was about the same as when you were here, except for a full moon that came up during the evening. We introduced that fish house stuff, and while it met with full approval they did not keep me as busy as you. The Pitres were out for the evening but left word to have Jim and Liz inspect the Fo'Castle which they did approvingly. Jim took a look at the statue in our study and fortunately was unable to guess the identity of the "learned" man. He was amused to learn that it is "Old Grandad." Incidentally, **Don Chase** was the winner of the guessing contest but he actually won by chance. A half dozen classmates guessed correctly—particularly after **Stark Draper** took one look at it and in an unmuffled stage whisper said—Oh that's "Old Grandad." Consequently there was a drawing and while I do not remember all who were involved in addition to Draper and Chase, I believe **Dave Shepard, Don King, Mary Smith** and **Howard Humphrey** were the others. In any event I sent the prize—you can guess what—along to Don Chase last week. Last Friday Ruth and I attended the inauguration of Howard W. Johnson as 12th president of M.I.T. I'll not attempt to tell you about it because it will

be covered in detail elsewhere in the *Review*. Our classmate Jim, as Chairman of the Corporation, made the introductions and the Investiture. It hardly seems 17 years since we saw him indoctrinated as President. There were so many representatives of universities, professors and corporation members that it was difficult to spot our classmates. Dave, of course, stands out above the others and was easy to spot, and I think I saw **George Leness** and **Stark Draper** in the procession. **Ted Mangelsdorf,** as president of the Alumni Association, brought greetings from the 55,000 alumni and did it masterfully. The luncheon was in what was the armory, but prior to this occasion **Herb Beckwith** had been turned loose on decoration and it was difficult to recognize the place. The key to the transformation was the lighting. Huge illuminated round balls hung from the ceiling and as we entered it looked as though they were of different sizes, but I'm sure it was an optical illusion due to varying distances. The walls were painted a pleasing soft green and panels seemed to cover up unsightly spots here and there. I would not have believed it possible. Strangely, the acoustics also seemed to have improved but I could see no evidence—possibly the large, spherical lighting fixtures were responsible. In any event Herb took a bow for his fine effort. All in all you can see that the Class of '26 was pretty much in evidence at the inauguration. Once we got into our seats we stayed there so it was difficult to see just who was there. However, we met **"Pink"** and Mary **Salmon** who were sitting near us and I saw **Martin Bergen** in the distance but never did catch up with him. All in all it was exciting to be present at another M.I.T. inauguration. I always put off the sad news to the end. . . . **Bill Kalker** looked so well at the reunion that it was hard to believe when I received notification of his death from the Alumni Office. I wrote Mrs. Kalker for a clipping which she sent along with a note telling how much Bill enjoyed the reunion—his first in all these years. "Scarsdale—William Kalker, 62, of 152 Hillaire Circle, died suddenly at White Plains Hospital. He was president of the Great Eastern Life Insurance Company, and vice-president of the First Colony Life Insurance Company. Mr. Kalker was a prominent builder of residential development, apartment, and industrial buildings in Winchester County. In recent years he has been engaged in major office construction in New York City, Chicago, Baltimore, New Orleans, Pittsburgh, St. Louis and Houston, primarily for the Fore Insurance Group. He was an alumnus of M.I.T. and a memorial is being established at the college. [This, I have just learned, will be a scholarship Bill made arrangements for in memory of his parents.] He is survived by his wife, Carolyn; a daughter, Mrs. Karen Schottland; and a son, Alan." We extend to Mrs. Kalker and her family the sincere sympathy of the Class of '26. This issue of class notes has been filled with interruptions. We started early this morning and it's now after five. I guess we got out of step during the summer, but after a couple more issues we should get rolling. As always the lag from writing to publication is such that I nearly forgot to wish you—Merry Christmas!—**George W. Smith,** Secretary, Pigeon Cove, Mass.

'27

As recorded at the very end of last month's notes, **Ralph B. Johnson** died in Queen's Hospital in Honolulu on September 5th. His widow "A.K.," who is known to many in our class, wrote to Dike Arnold that the death from brain cancer came after a comparatively short illness, "so out of the blue, he had always been so well," she said. At the memorial service, at Central Union Church, the words of appreciation which were given began: "When the story of men of Hawaii for this generation is finally written, the name of Ralph Blake Johnson will stand at or near the top of the list of the truly great. But Ralph was more than a man of Hawaii. He belonged also to the nation and to the world." After citing Ralph as a man of vision, principle, and character, a strong family man, and one of well-rounded interests, the words of appreciation concluded: "Some one has said that true success 'is a man who has lived well, laughed often and loved much, who has filled his niche, and accomplished his task, who has always looked for the best in others and given the best he had'. Well, if this is the definition of true success, Ralph Johnson was a successful man. He was even a great man." In an editorial, the *Honolulu Advertiser* said: "It is significant that Ralph B. Johnson was a plantation-born man of Hawaii who grew to national stature as a business leader—a member of the prestigious private Business Council which advises the President, a director of the Standard Oil Company of California, who named a tanker after him. It is also highly noteworthy that he helped Hawaii grow to the level of economic prosperity we enjoy today. As chief executive of Hawaiian Electric Company over much of the past decade, he was a key figure in the post-statehood boom. . . . He did things with a dedication and vision of a Hawaii that seeks progress while preserving the best of the past, he saw statehood as a hope for fulfilling Hawaii's potential, and predicted the economic growth to follow. . . . In doing these many things, he became the example of the best in man seeking to make the transition from one era to another. He did it with grace, understanding and quiet leadership." Our class's condolences are added to those of his many friends and admirers. In our undergraduate days Ralph's qualities were evidenced in friendships which have lasted through the years.

Ralph B. Johnson, '27

There is a post card picture of the Parthenon received from Betty and **Glenn Jackson**. Says he is busy but had a chance at a small vacation from his job in Persia. . . . A promotion for **Bob Bonnar** who is now Corporate Director of Purchasing for General Analine & Film Corporation. . . . "No longer news in these times" is the way **Fred Willcutt** advises that he and his wife took a round-the-world trip this summer. We still think it is newsworthy and are glad to hear that it happened. Fred has a son with IBM and another at the University of Kentucky. . . . **Ed Leach** has moved from Springfield, Ill., to 530 Bennington Terrace, Ridgewood, N.J. 07450. He has been with Sangamo Electric Company for many years and at last report was a vice-president. I hope we hear some details of the move from him. Very belated word has been received of the death in 1963 of **Sayre B. Rose,** whose address was 300 Main St., Glastonbury, Conn. I am sorry that my files contain no information concerning this classmate. **Bob Bonnar,** as chairman of our reunion next spring, has tried out the golf and fishing at Bald Peak Colony Club, which will be the scene of the get-together. Bob's golf was poor, but the fish were obliging.—**Joseph S. Harris,** Secretary, Masons Island, Mystic, Conn. 06355.

'28

During the evening of September 26 a group of members of the Class of '28, most of us with our wives, attended a dinner meeting at the Faculty Club in Cambridge. Those in attendance included **Abe Woolf,** chairman of our reunion committee, with Ruth; **Jim Donovan** and Frannie; **Elbridge Atwood** and Beryl; **Maurice Beren** with Rose; **Bill Carlisle; Bob Crawford** with Barbara; **Roger Haven** with Priscilla; **Dave Olken** and Gladys; **Charlie Worthen** with Velma; **Jack Chamberlain** with Jan; and your Secretary with Dorothy. Florence Jope, our deputy reunion chairman, had planned to come but had to stay with an ill daughter. We need not remind members of the class that this will be the first fortieth reunion that takes place on campus, McCormick Hall. And judging from the enthusiasm of those in attendance at the meeting, it promises to be a humdinger—within the range of our personal mobility, which is not what it was fifteen years ago at our twenty-fifth. Abe Woolf has decided to adopt a slogan: "Let's Make a Date for '68." We hope to present more definite plans in future class notes. A personal note dated July 9 from **Claude Rice,** 15 Fairview Terrace, Glenville, Conn., follows: "I've been reading your class notes and have decided I should make my own small contribution. For a number of reasons I do not encounter many of our classmates here in New York. I occasionally run into **Bob Krummel,** who is with Consolidated Edison Company, and from

time to time I hear indirectly from **Ted Pierce,** who is also with Consolidated Edison Company. I spoke to **George Palo** on the telephone the other night and was sorry to learn that Mrs. Palo (Ann) had just had some surgery. As for myself—my wife died last March, so I'm an old widower now. Also, I am looking forward to retirement in a couple of years. While my present plans are by no means firm, I will probably move back to New Hampshire, where I have some land, and build a small house. As a temporary thing, I may put a mobile home in on the property, so as to give me a base to operate from. Can't seem to think of anything more in the way of news to pass on to you, so I'll sign off." . . . And a note from Charlie Worthen, General Radio Company of West Concord, Mass., says: "The enclosed note from **Vic Decorte** may be useful for the class notes. I suppose that it may be too late to get something of this sort in the November issue of the *Review,* but it occurs to me that it might be a useful reminder to others whose companies match the employee contribution to the Alumni Fund. If they are retiring this year, they should make their final contribution before their retirement date. It was nice to see you and Dorothy last evening. This is my first attempt at getting back to work, and the morning seems to be taken up mainly with shaking hands and catching up on correspondence about the Alumni Fund. I suspect, however, that this will change after a few days." We might add that Charlie had a slight circulatory ailment in August; but as his note indicates, he was back at work in the latter part of September. Incidentally, he and Velma during the past couple of years have been staying at Little Compton, R.I., during summer vacations. Charlie plans to retire December 31 of this year; and they will build a year-around home in Little Compton, which will be a permanent address. The letter from Victor Decorte follows: "I am retiring on December 1st after over 32 years of foreign service with Esso. We are going to settle down in Rome, but will continue to travel a little, including a yearly visit to the U.S.A. in the most leisurely way—by passenger liner. In order to make our '40 year fund" benefit to the utmost from Esso's matching grant, I am going to make my special contribution now instead of later. Will you, therefore, arrange to have the contribution form sent to me immediately instead of later on in the year. We are in good health, but Alice dreads the moving. Nevertheless, we are looking forward to full freedom and life in a better climate and a beautiful city. The fact that we both speak Italian fluently naturally helps. Many thanks and all the best."

A news release from Booz, Allen & Hamilton, Inc. tells us that one Daniel T. Carroll has been appointed Managing Officer of the East Central Region for that firm of international management consultants. **Stan Humphrey,** who announced the appointment, stated, "This appointment conforms to the firm's policy that the active management of its

Stanley M. Humphrey, '28

several units should be in the hands of qualified younger members of the firm." We forgot to mention that Mr. Carroll succeeds our classmate Stan Humphrey, who will continue to have offices in Cleveland and Detroit and will continue to reside at 1565 Kirkway Drive, Bloomfield Hills, Michigan. . . . Another news release tells us that **Henry G. Lamb,** '28, safety engineer for the American Standards Association, New York, was recently elected Vice-president of the American Society of Safety Engineers at the Society's annual meeting October 24 in Chicago. . . . The director of Telecommunications Management, Executive Office of the President, recently announced the appointment to his staff of **Cole Armstrong** to the position of Associate Director, National Communications Directorate, effective November 1. Cole is retiring from the Bell Telephone Laboratories, Inc., where he held the position of Executive Director, Military Communications and Quality Assurance Division. Excerpts from the press release follow: "In his new position with the Office of Telecommunications Management, he will be one of Mr. O'Connell's principal staff associates charged with the surveillance of the operation and development of the National Communications System as well as being a key staff member in the development of national policies in the field of telecommunications. Mr. Armstrong comes eminently well qualified to serve in this capacity. He has both Bachelor and Master's Degrees in Electrical Engineering from Massachusetts Institute of Technology which he received in 1928 and 1929. After his graduation from M.I.T., he began a career in communications which now spans some 37 years. From 1929 until he entered on duty with the Navy in May 1942, Mr. Armstrong was employed by the New York Telephone Company. He resumed this employment after return to inactive duty at the beginning of 1946. His work was principally in the field of traffic engineering and management for dial and manual offices in the New York City Metropolitan area. One of his principal responsibilities was to plan for and to supervise the transition from manual to dial service in Westchester and Rockland counties, which started to cut over in 1947. The engineering involved the phased installation of automatic switching equipment in such a manner as not to result in an interruption of service. In January 1948, Mr. Armstrong went to AT&T, where he became responsible for the development of traffic methods and practices to be used in engineering operations throughout the entire Bell System. At about this time the Number 5 Cross Bar (#5CB) switching system was being put into operation by the Bell System. Mr. Armstrong coordinated many aspects of the installation of the first #5CB office and was responsible for maintaining liaison with Bell Telephone Laboratories (BTL) with respect to the development of requirements for further refinement of the system. In 1950 Mr. Armstrong transferred to the Engineering Division of AT&T responsible for defense activities, and thereafter, he worked with the Department of Commerce (BDSA) on the allocation of critical materials during the Korean War, with the FCC and ODM on a priority system for the restoration of private line services; with FCC and FCDA on the development of our alerting system for radio stations operating in CONELRAD; and with DOD and ODM on the development of industrial security requirements and procedures to be used in the Bell system. Mr. Armstrong was responsible for the general coordination of all Bell System activities associated not only with the satisfaction of military communications requirements, but also with the development of a nation-wide air traffic control system. FAA requirements were obtained and he coordinated the activities of BTL, Western Electric (WE), as well as the Bell operating companies to develop, manufacture, and install the communications support equipment for such a system. Since 1950 there has not been a single military communications system of any significance which has been developed without Mr. Armstrong's participation in some degree. There are few, if any, persons who have the broad knowledge of communications operations which he has acquired over the past 37 years. Mr. and Mrs. Armstrong plan to give up their residence in Morristown, N.J., and establish residence in the Washington area."

I don't remember whether we published the following dated September 13 from **Jim Donovan:** "In addition to the Alumni Conference there was, of course, this Alumni Seminar—you can note the '28ers involved. I saw all of them except Mr. and Mrs. **Carl Myers;** did leave a note asking him to call me. The others were there and you can so report. In talking with **Karl Otte** I learned he has retired from the bakery machine business and is teaching on the Chicago Campus of the University of Illinois. He seems to be enjoying it. Can also report that **Ray** and Edith **Wofford,** Karl and Maxine Otte and **Johnny Melcher** all asked how the reunion was coming. I pointed across to McCormick Hall, which is now being enlarged, and said they were enlarging it just so we could have our reunion there—also that Abe Woolf is having the first committee meeting, September 26th." Jim also sent along the copy of a letter from **Paul Ruch,** 669 Washington St., Denver, Colo. 80203. Please forgive me for not replying to your correspondence more promptly. I have just returned from my 5th trip to California this year. Each trip involved some 3-4 weeks, so you can see that I have been away from Denver

about as much as I have been here. We all appreciate what you and your committte are doing for M.I.T. and '28, and I will be happy to help if I can, and if you can tolerate some unavoidable delays in correspondence. Let me know what I can do to help and we'll see what we can accomplish. Do you ever get out this way? If you do, pick up a phone and see if I'm in town. Would like very much to see you. Best personal regards and best wishes for committee success."—**Hermon S. Swartz,** Secretary, Construction Publishing Company, Inc., 27 Muzzey St., Lexington, Mass. 02173

'29

We were delighted to hear from **John Happel,** who is Professor and Chairman of the Department of Chemical Engineering at New York University. While on leave from the University last spring, John spent three months in Japan where he made a thorough study on the subject of catalysis, interviewing research workers and visiting industrial organizations throughout the country. The trip was sponsored by the National Science Foundation in conjunction with its U.S.-Japan Cooperative Science Program. The results of his trip are carefully summarized in an article, "Fundamental Catalysis Research in Japan," which is reprinted from the *Chemical & Engineering News* May 30, 1966 issue, pages 80-89 for those interested in this field. Many thanks, John, for your letter and copy of the article. . . . Thanks to the following classmates who jotted down some class news in mailings to the Alumni office. **Morris Smith** has lived in Los Angeles proper for the past two years where he is employed at North American Aviation, S & ID, Dawney. His work is concerned primarily with electrical power aspects of the Apollo and Saturn. . . . **John Courter** of Austin, Texas, writes that he is retired from the U.S. Bureau of Public Roads, Baltimore, Md., after 35 years of service. He is now employed as an Administrative Engineer by the Texas Highway Department. . . . Although still President of Lyke Corporation, **Hiram Lyke** of Oconomowoc, Wis., says he is semi-retired with plenty of time for fishing, hunting and travel. . . . Congratulations to **Lloyd Vickery** of Ponca City, Okla., who was promoted in May to General Manager, Engineering Center, which includes Central Engineering Department (mechanical, electrical, civil, construction, etc.) plus Process Engineering Department (chemical engineering, new projects economics, technical services, etc.) for Continental Oil Company, both domestic and international. . . . From **Warren Walker** of Montclair, N.J., we learn that his son Eben enrolled at M.I.T. in September of 1965, and Warren says, "Will graduate exactly 40 years after his father." **Maurice Barker** of Fayetteville, Ark., returned his questionnaire just recently. He is presently retired. His accomplishments include distinguished service in the U. S. Army where he progressed to the rank of colonel. He initiated the first course in defense against atomic weapons at Edgewood Arsenal, Md., in 1946. After retirement as colonel in 1948 he became Professor of Chemical Engineering and Head of the Department of Chemical Engineering at the University of Arkansas, which position he held until retirement in 1961. Maurice enjoys hunting, gardening and photography and is a consultant to Arkansas Development Commission on plant site information and consultant to Chemical Corps. U. S. Army, on activated charcoal. The Alumni Office sent a change of address notice for **Gustav Stein** who is now living in Boca Raton, Fla. Gus was formerly with Dansk Esso A/S in Copenhagen, Denmark. . . . Also back from foreign service is **Arthur Marlow,** who is now residing in Pasadena, Calif., after working in West Pakistan.

A news release from the Grumman Aircraft Engineering Corporation brings us word of the death of our classmate, Vice Admiral **Edward W. Clexton,** on August 18 at the USAF Hospital, Weisbaden, Germany. Vice Admiral Clexton had retired from the U. S. Navy in 1960 after 36 years of service, at which time he became a Vice-president of Grumman Aircraft. During his Navy career Admiral Clexton received the Distinguished Service Medal, the Navy's second highest military award. His impressive career was highlighted with a multitude of other military awards. Edward Clexton received his Master of Science degree at M.I.T. in 1929, following graduation from the U. S. Naval Academy in 1924. We extend our heartfelt sympathy to his family which includes six children and eighteen grandchildren. . . . Though not actually a member of the Class of '29, Andy Ivanoff was closely affiliated with many of us. We were very sorry to hear of his death on June 13 in Orlando, Fla. Andy was a retired Lt. Colonel USAF. . . . We are all grateful to our Class President **Erio Bianchi** for his informative letter in which he reported on the Alumni Fund contributions from our class which totalled $45,484 for 1966 with 180 members contributing. Please note his reminder about our goal for an impressive forty year gift in 1969. I am sure cooperation from all will be most appreciated by the various class members who are working so hard to make this campaign successful. Even though it seems a little premature to be thinking of Christmas as we are preparing these notes in October, you will be receiving this issue when St. Nick is on his way—so I would like to extend my warmest wishes to all for a happy holiday season.—**John P. Rich,** Secretary, P.O. Box 503, Nashua, N. H. 03060.

'30

The 7th Alumni Officers' Conference at M.I.T. in September was a resounding success, due in no small meaasure to the efforts of our classmate **Greg Smith,** who was chairman of this year's Conference. Normally a half-day session at each A.O.C. is devoted to talks by M.I.T. staff members on projects in which they are engaged. This year Greg made a special effort to arrange a series of talks on "off-beat" projects arising out of the interdisciplinary activities at the Institute. The result was an altogether fascinating series of talks including, for example, a description of the efforts of members of the Chemical Engineering Department to apply their knowledge of industrial fluid flow and filtration to the design of an artificial kidney. The class of '30 was well represented this year; those attending one or more events included: **Charley Abbott, Joe Harrington, Jack Latham, Sieg Linderoth, Ralph Peters, Herman Scott, Dave Wells** and **Dick Wilson**. . . . This month there is a report of another classmate who has moved from industry into education. **Ed Depoyan,** who was formerly with Carborundum Company, is now teaching physics and math at the Admiral Farragut Academy in St. Petersburg, Fla. He lists among his hobbies the fact that he is an "eager backgammon player when I can find an opponent." . . . **Bill Dickerman** and his wife, after having lived in Paris and London for a number of years, are now residing in Greenwich, Conn. Bill does part time consulting work for the Lummus Company in New York and lists boating and photography among his hobbies. He also did a fine job as our local class chairman for the Alumni Fund last year. . . . **Norm Doloff** is Chairman of the Department of Geology at San Jose State College. He is a director of the Santa Clara County TB and Health Society and of the Moss Landing Marine Laboratories, as well as being active in public school affairs. He and his wife Phyllis and son David live in Saratoga. His note recalled the fact that Marion and I had a very pleasant visit several years ago at the Dolloffs' home which includes a picture window through which one obtains a spectacular view of the Santa Clara Valley. . . . **Willard Paine** has been elected a director of the Union Commercial Bank of Westlake, Ohio. Willard is president of Bendix-Westinghouse Automotive Air Brake Company of Elyria. . . . **Max Wheildon** has been appointed chief of the surface protection products unit for Norton Company's refractories division research and development department. . . . By the time these notes appear you will have received Dick Wilson's letter commenting on the current rather deplorable state of our effort to achieve a respectable 40-year gift by June 1970. The 1966 Alumni Fund figures reveal that of the 20 classes graduating from 1921 to 1940, we rank 19th in percentage of contributors and 17th in amount contributed. This is manifestly not a very impressive record for a class that should now be statistically pretty close to its peak earning capacity. —**Gordon K. Lister,** Secretary, 530 Fifth Avenue, New York, N. Y. 10036.

'31

Although I have consistently refrained from presenting oral reports at our five year reunions because written reports

have been included in the class notes following the reunions, perhaps I should have taken the opportunity to stress the difficulties in writing the class notes when you don't let me know what you have been doing. **Claude Machen** was my life saver this month when he wrote —"Jean and I have had a good summer. Our older son, Bill, graduated from Wesleyan (Connecticut) in June and enters the University of Michigan Law School about two weeks from now. Steve, our younger boy, has been in Peru on an educational exchange project all summer and we expect him home about the time Bill leaves. He is accepted at Lafayette for this fall. Jean and I are expecting to make a trip to Europe in October, if all goes well, so we shall perhaps be more newsworthy later in the year." Thank you, Claude, and I hope you and Jean made that trip to Europe and had a most enjoyable time. My daughter, Babbie, transferred from UCLA at Los Angeles this fall to the University of California at Berkeley, and from reports seems to be enjoying it there. A note from **Fred Elser** (with whom I keep in touch by ham radio) tells that he left for San Francisco on October 8th where he and Mardy are boarding a ship for Manila on the 10th. Fred will be in Manila or thereabouts until sometime next March, and for the benefit of any other radio hams in our class, he may be on 20 meters, ssb, from DU 10R. Three new addresses were reported during the past month—**George T. Bevan,** 955 East Seneca Lake Rd., Romulus, N. Y. 14541—**Eugene Branca,** 21 Rockwood St., Jamaica Plain, Mass. 02130, and **John W. Smith, Jr.,** 9 Burgess St., Falmouth, Maine 04105.—**Edwin S. Worden,** Secretary, 35 Minute Man Hill, Westport, Conn.

'33

Well, we are off and running again, for December, as you will note on the cover. We have not the perennial chinamans' chance of getting even close to the volume of notes established one issue earlier. First, we have a copy of a short note from President Johnson to **Ed Goodridge** extending to the class through Ed his appreciation of our having attained the full amount of the funds required to put our Robert M. Kimball Scholarship to work—a very fine note from an obviously very fine man. For particulars on the Fund itself, see the November issue. **Jim Turner** thinks that we should regard the effort on the Fund as closed, virtually, and not open ended as I mentioned here before. He agreed that anyone may specify where his donations are to be entered in the Alumni Fund, and that the Scholarship Fund is as eligible as any. Incidentally, Ed Goodridge will soon get out a letter to you about the 35th Reunion in 1968. I do hope that he will mention the 40th, which is closer than we think, 1973. This one will be the big one for now, the 35th at Chatham Bars Inn, and the 40th at the Oyster Harbors Club, Osterville, Mass., Cape Cod. Jim Turner is Chairman of the 35th Reunion Committee. Jim and Edna came to see us only a week or so ago, and we had a chance to hash it all over, what with a few libations, and dinner (as Jim's guest yet). I do not believe that many of us are even in a position to appreciate Jim. He appears to be indefatigable, and is willing to take on any tough job, after others refuse it. (See who put the Kimball Fund over).

Dated in August, but held over for this issue, is a fine letter from **Cal Mohr.** As usual Cal finds a classmate or two hither and yon. He reports on **Bob Smith** as follows: Bob was to have been at a Chemical meeting at Rochester, N. Y., but did not make it, so Cal finds that he went to Rochester, Minn., to see his daughter who is married to an M.D. on a three-year Fellowship at the Mayo Clinic. After Minnesota Bob went to Denver to attend an annual convention of Rotary International. It seems that Bob is very active in Rotary activities and is well on his way to joining the National Officer group. After Denver he went to Los Angeles, where his son was graduating from California State at L. A. where he majored in math. Bob completed his transcontinental round trip by visiting his daughter at Rochester, though Cal left open which Rochester this time. Cal tells me that Bob is in charge of NUCERITE development with Pfaudler Corporation, and they have finished a remarkable piece of work in the development of an application of Nuverite in the heating elements used in the coffee heaters, and in similar applications. On **Wayne Taul** Cal reports at some length. Wayne was a West Point grad when he came with us. He is a consulting engineer in Fresno, Calif. Cal sent him an announcement of summer courses at UCLA, in earthquakes, and he replied that he had taken all these courses in past years and knew many of the professors giving them. We quote Wayne through Cal, "We had three quakes during the past week, near Fresno, all of which affected us as I had three sizeable projects going in the fault area at the time. One project was the new Paul Mason Winery, which is near the San Andres fault. The quake was severe but did no damage, as is generally the case when structures are properly designed." Wayne's older daughter is teaching school in Los Gatos, and his younger daughter will be a senior at Fresno State this fall. His son has been in Europe this summer with a group of college men, although Wayne did not mention the college. . . . Wayne sees **Doug Stewart** occasionally. Doug's oldest daughter will be a senior at Mills College this fall. He continues to run Olympic Metal Forming Company, which he owns. . . . **John Gardner** is now living in New Jersey, as the Crystal Lake plant of National Grain Yeast Company has been closed. Cal picked up this info from Trudi and Jack Summerfield at a Gourmet dinner in Dundee, Ill. . . . Through another third party Cal finds that **Otto Putnam** is the busiest yet, what with operating plants of Althouse Chemical Company, as well as acting as liaison officer between customers and their development division. . . . **George Garcelon** is also with the same outfit. He had little to say about himself when I saw him at the Alumni Officers Conference. . . . Cal mentions **Andy Regan** and his new job with Tennesee Eastman, Manager of Mechanical Purchasing. So much for Cal. A disinterested reader might think that Cal is the writer of these notes. Thanks Cal.

Another one in the August category is a nice, chatty letter from **Fred Murphy.** Fred wrote in reply to something of mine, since forgotten by me, but lo! not by Fred. He was asked for opinions on the various clubs, hotels, and bistros along the Cape suitable for Class reunions. He approves of the places we found, Chatham Bars Inn, and the Oyster Harbors Club, which makes it unanimous as all those asked have approved. Of course we did not ask many as it is almost impossible to get a reply at all, to say nothing of a prompt one. Fred continues, "not being an habitue of these flesh pots, I can't give any first hand information, so why not drive down this way and we will make a tour of the Cape, and case these joints." . . . Now in September comes a note from **Bob Forbes,** the TVA tycoon who comments on the built-in bar, the sharp drink, etc., etc. that he enjoyed in Florida at our cottage. That ought to get a few more of you to stop in. As an aside, how can you lose? 1079 Hillsboro Beach. Bob has another granddaughter in Memphis. Around here he is called "Grandsir." Although Bob has worked for the TVA for twenty years, he just made his first annual trip around the acreage in all that time. He addressed the Hydraulics Division of the American Society of Civil Engineers on "The Lack of Sediment Deposits in TVA reservoirs." Bob and wife will visit a sister in West Hollywood, Fla., during Christmas. Please do not forget to drop in, Robert. . . . I have at hand a letter from **Tom Fitzpatrick,** Univ. of Virginia. You might remember that I quoted Tom as looking forward to an European tour this summer, though he can scarcely call it a vacation as his "Congress of the International Society for Rehabilitation of the Disabled" starts in Wiesbaden, September 12th. Tom stopped on the way in Genoa, Rappello, Milan, Belaggio, Vaduz, Stuttgart, and finally Wiesbaden. He presented a paper to the Congress, as a well-known architect who has specialized on the architectural phases of facilities for the disabled. I have commented many times on top notch men sacrificing income to go back to, or remain in, teaching. Tom considers these as kind words, but he has been able to combine his teaching with professional work and finds both rewarding, but in different ways. He has received several Honorary degrees, and at one time was the youngest Fellow in the American Institute of Architects. He has sent many of his students to M.I.T. for their graduate work, and will continue to do so. Tom and Beverly have just returned from the Rhine Steamer trip, Wiesbaden to Cologne. This is one of THE trips, anywhere. The Rhine steamers start at Basle, Schweiz, and follow the Rhine north for several hundred miles; though, without question, the prettiest and most interesting part in the whole trip is the part Tom took. The long trip ends up at Rotterdam. All three steamers, 2-3 years ago, were brand new,

spick and span, and well-operated, full pension style, rather than with separate ship classes as one finds transatlantic. No choice meals, but still good meals, with no choice scarcely a hardship. . . . I have a fine note from **Ellis Littmann** wherein we discuss various books, and where Ellis sends me one and I retaliate with another. Ellis mentions how nice it was to visit last week, which was the Alumni Officers Conference. Perhaps we should understand that some Alumni Officers are elected by the classes, and others appointed by the Institute, or the Alumni Association. We had eight from our class in attendance, and it surely was a great conference. We just cannot cover the subject matter here. But we can cover who made it: **John Longley,** Albany; **Westy Westaway,** Boston; **George Garcelon,** Pennsylvania; **Bill Andrews,** Concord; **LeBurton Webster,** Concord; **Ellis Littmann,** St. Louis: and last but surely not least, **Bill Barbour,** Concord. And yours truly, of course. Ellis is sporting(?) a Moustachio!! He was visiting with **Walt Skees** in Los Bahamas and that inspired the mustache. . . . John Longley did more than most of us when he managed a visit with **Dick Fossett,** one of our Vice-presidents. John was invited to Dick's home, was royally welcomed, and had a fine visit. John couldn't pin down too much of what he found out about Dick, but he did feel certain that Dick is doing very well and is more than happy with his fine home and his position with P & G. The Alumni Office wanted me to check addresses for them and get Zip Codes if possible. It gave me an excuse to write to some of the boys, and believe it or not, I heard from all of them, zip codes and all. And in each case the reply was quite prompt and included a short message. The messages were personal, and we refrain from quoting here. Back to the Alumni Officers Conference—aside from the program of instruction(?), the large group of over 400 visitors, as differentiated from Institute people, had several extra curricular events: we helped dedicate the new "Pierce" Boathouse, which is on piles in the river about opposite from the Phi Delt house on Memorial Drive. Dr. Killian presided, and we heard from our new President Johnson and several others, including the crew coach. Friday evening, the first day of two, we had cocktails on both first floor terraces at Walker and then a buffet dinner. Saturday noon we had lunch at the Faculty Club and heard a very inspiring speech by Mrs. Karl Compton, who is a real part of the Institute. Was not Dr. Compton inaugurated while we were sophomores?

Just for the record, I wish to paraphrase from a letter from James J. Rattray, 48, President of the M.I.T. Club of Mexico City. The Club Fiesta will take place March 9 through 11. Previous issues have carried not only our short treatise on the Fiesta, but that of many other classes, some of whom are making this into an annual pilgrimage; and what a great time these folks do have! We may have more later, especially if Ellis Littmann should decide to become Chairman of the 1933 Fiesta Committee. I have the addresses of the Officers of the Club, if needed. . . . I have a short one from **Mal Mayer,** postmarked Washington, Maine, which is Mal's retreat. He even has to make his own electric current and has no phone, or at least did not have one when he visited with us here in Exeter. Mal had, at that time, decided to take in the Alumni Seminar, after which he was to have taken one of his combo business-pleasure trips to Great Britain, then Belgium, Holland and France. Mal sent me a phone number, one of a lady in Carmel. I thought that Mal was more than nice in so doing, as at my age phone numbers are mostly fond memories. Actually I felt a bit indifferent about this until I remembered that Sylvia Schwarz is the mother of Mrs. Mal Mayer, Eleanor. Mrs. Schwarz was with the Mayers during their call on us. . . . We have a short one from **Chuck Thumm,** Dude Ranch man from Elfreda, Ariz. He had little to say, just a reminder that he is still in business, and a plug for the wonderful country (and it is). We have address changes from quite a list. We quote the names, addresses upon request: Johnny Longley, VIA; C. Alvin Moeller II; John Maxim, II; Ed Oxnard, V; Capt. Alex Sledge, XIII A; Carl Swanson, I; James Stewart, I; Mrs. W. Seymouth Smith, IV; Norm Spofford, IA; Dr. John Hanlon, VIII. All these but Oxnard, Hanlon, and Stewart are zip code additions. . . . I have a short one from **Bill Harper,** who practices chiropractic in some unlikely place called Pasedna (Texas, yet). William complains that he has not yet received any Reviews this fall (written October 2nd). I will have to write and let him in on a few facts of life. However, inasmuch as Wm. has had some trouble before, I will pass on his gripe to the powers who be at 77 Mass. Avenue. One question that Bill asks may have some meat in it. He asks, "What date is the deadline for subscriptions?" Golly, I know not the answer to that one. I didn't know one could subscribe, as I subscribed for life way back when. (Yes, subscriptions can be had, $4 per year, beginning whenever the order arrives.—Ed.) My understanding is that, these days, one makes a donation of suitable size to the Alumni Fund, after which one becomes a reader automatically. What is suitable size? I understand that suitable size is the amount at which the figure becomes noticeable around the office; I would say $20.00 per annum. I may be wrong. By the time you read this right before Christmas, Bill will, once more, be happy. . . . It is hoped that **Jim Turner** will have his 5th Reunion committee shaped up by the time the January notes are written, as right now Jim is all alone as Chairman. Perhaps later on we will give you a short resume of Reunion procedure in the Alumni Association Office. With them the Reunion is an important part of their work. Starting with the Class of 1906 this year there were eleven reunions of the 5-yr. variety, which includes the 25th, 40th, and 50th, all major, as the 35th is rapidly becoming. No press notices this time, but a satisfying amount of gossip from among ourselves. That's it. I still expect to hear from every one of you before this column is abolished.—**Warren J. Henderson,** Secretary, Fort Rock Farm, Exeter, N.H. 03833

'34

John Hitchcock is working for Dennison Manufacturing Company in Framingham. He has a very interesting job as Production Manager of the Dennison Data Systems Division. His job consists of many phases related to tags and labels and the automatically reading tag machine which operates like a computer reading standard tab cards. John has been with Dennison since three weeks after graduation, the first two weeks of which were spent tending a gas station. He knows the company from A to Z, having been in such things as accounting, sales manager for New York City and the East Coast, and Merchandising Manager. His son John, now 26, is married and teaching biology and chemistry in a private school in Sag Harbor, Long Island. His 13-year-old daughter is still at home, helping to tend their menagerie which has been a perpetual custom with them at home. When son John was in high school he had 90 white rats in the basement. John (senior) continues to be interested in amateur dramatics for it was in such an activity that he met his wife. Recently the two of them played the leads in "Solid Gold Cadillac." . . . John recently saw **George Bull** and his wife Mary Elizabeth. George and his wife continue their fluency in German, French and Japanese. They are even active in church work and politics, despite the fact that they must be attentive to their 17-year-old daughter. . . . **Paul Wing** is manager of production planning of Worthington Controls. This involves the travelling to see many customers and doing a bit of crystal ball gazing and soul searching. Paul is an avid recorder player and as a member of the American Recorder Society, was in a concert in Boston. He is still interested in the virtues of such 14th, 15th and 16th century instruments as viols, hawms, cornettas and other wooden instruments. He collects old stereo photographs and has 12,000 of them neatly filed. When such photos are saved for 100 years it's because they are excellent both artistically and historically. One is of Edwin Booth and another of the Great Eastern Steamship laying the transatlantic cable. His son, also called Paul, is getting his doctorate in industrial engineering at Berkeley after having graduated from Princeton. He is interested in computers and the intricate mathematics involved. Daughter Anne is a senior at Russell Sage. His wife Claire continues her interest in music with Paul, as she was a graduate of New England Conservatory of Music. . . . Both Paul and **Johnny Westfall** attended the dedication ceremony of the new boathouse. Johnny, only 10 lbs. over his school weight, was in the first shell to leave the boathouse at 7 a.m. the next morning. In true Westfall fashion he trained for this position of being the oldest in the shell by staying up late. . . . **Bob Franklin** takes regular winter vacations with his wife at such places as Antigua, St. Kitts, St. Croix and St. Thomas. At times the vacation starts off with a 10-hour wait at JFK Airport. Bob has had to move his garage in Searington, Long Island, to make room for a widened

street. In Brewster, on Cape Cod, he has done as much as he can in perpetually fixing up his house which he bought four years ago. Being thus tied to chores on land he is ready to give up his boat to an interested customer. . . . **Eric Isbister** returned two years ago to his favorite location, Long Island. He is working with Hazeltine as manager of radar, after having been three years in Florida with Radiation, Inc. . . . **Jean Raymond** proves his business success by being extremely active in other matters as well. As chairman of the board of trustees of the National Gallery of Canada, he toured Egypt some time ago. He made the arrangement with the Egyptian government for exhibitions in Canada and at New York World's Fair. The exhibit was of some very precious relics from the tomb of Tutankhamen. He also spent ten days with **Hank Backenstoss** in Beirut. He says that Hank makes frequent trips to Saudi Arabia and one of his main projects is a water resources study. Sounds like a difficult assignment because the subject matter is so dry. Jean was president of Colége Marie de France which is a 4-year college owned by the French government. The girls get a vigorous education and work hard at the European curricula until graduation, when they are about 18 years old. . . . **Rudy Churchill** is now on the beautiful island of Saint Croix enjoying its mellow climate. He and his wife are building a house, for they will live there most of the time, henceforth. After 32 years with W. T. Grant, except for military service, Rudy looks forward to a somewhat less hectic life. He plans to become active in one of many possible activities in this U. S. Territory which is developing too rapidly. It already has 200 former Connecticut residents. His three sons are: a lawyer in New York, specializing in real estate law; an Obelin graduate, now taking his masters at Carnegie Tech and specializing in theatrical technology such as stage lighting; and sophomore at Hotchkiss. Rudy's address is, pending construction of his house: c/o Bache and Co., 45 Company St., Christiansted, St. Croix, Virgin Island.

Alumni Day in June was a good excuse for the following class members and wives to gather at Cambirdge for the festivities —Ralph Brown, Mr. and Mrs. Gordon Burns, Mr. and Mrs. Samuel Groves, Mr. and Mrs. Norman Krim, Mr. Henry Morss, Jr., Mr. John Westfall and Mr. and Mrs. Carl Wilson. . . . **Roger Coffey** sent along a fascinating article in *Steelware* about **Ed Sylvester** entitled "Applied Ingenuity USA." This story gives Ed credit 25 years after he had the idea for making practical a process called "pressure pouring"—"Today, after less than two and a half years of commercial steel industry usage, between 10 and 15 percent of all stainless steel products shipped from mills in the United States are rolled from slabs made by pressure pouring. . . . With this new frontier comes a whole host of new challenges, and, Ed Sylvester is a happy man as he faces them. Today, he has his own company and a fine staff of draftsmen to help in his innovations." . . . **Herb Andrews** writes, "I am working as a Senior Research

His Excellency, Abid Salih Sheikh, Minister of Commerce and Industry, Government of Saudi Arabia, signing contract for services of Jackson & Moreland, International, Inc., with Henry B. Backenstoss, '34, on April 12, 1966, in Riyadh, Saudi Arabia.

Chemical Engineer in our [Colgate-Palmolive Company] Jersey City Pilot Plant where I have been for many years. My son Stephen is a junior at Syracuse University and my daughter, married, is living near Miami, Florida. She has a daughter, who makes me a grandfather." . . . **W. W. Hofmann** has just been appointed assistant chief engineer, capital appropriations, on the staff of John E. Jacobs, Vice-president of operations, Bethlehem Steel Corporation. "He joined Bethlehem Steel as a member of that year's Loop Course, management training program for college graduates, and was assigned to the Johnstown, Pa., plant. At Johnstown he was promoted through the years to metallurgical assistant and assistant metallurgical engineer, then advanced to assistant superintendent of the lower works in 1940. He was named assistant superintendent of the Frankline mills in 1949 and became assistant chief engineer of the engineering division in 1952. In 1954 Mr. Hofmann was transferred to the West Coast as Chief engineer of construction for Bethlehem's Pacific Coast operations. He was assigned to the operations Vice-president's staff at the home office in Bethlehem in April 1965 as chief project engineer (West Coast) and was named supervisor, facilities planning, a month later. Mr. Hofmann, a member of the Association of Iron and Steel Engineers, is a certified professional engineer. Temporarily residing in Center Valley, he is building a home in Saucon Valley Terrace, Bethlehem." . . . **George E. Westefeld** writes, "I recently returned from a one and one-half year stay in the Rio de Janeiro area in Brazil where I assisted in equipping a brass mill for an Anaconda subsidiary, S.A. Marrin, at Nova Iguacu, Brazil. My wife Ruth and I lived at Copacabana Beach." . . . **Herb Plass** tells us that he is "now Clinical Associate Professor of Internal Medicine at Minnesota Medical School, and earn my living in private practices. A busy and gratifying life." . . . Members of the class who took part in the inauguration of M.I.T.'s new President included **Mal Stevens** who represented Brown University. Mal is now Vice-president of Brown. Alumni Term Members of the Corporation listed for the inauguration included **Frank Milliken** and **Sam Groves**. . . . The *Magazine of Standards* includes the following:

"**Russel Hastings, Jr.,** new chairman of Committee B87, is assistant to the Vice-president Industrial Truck Division, Clark Equipment Company. He has participated in national and international standardization work on industrial trucks for several years. From 1958 to 1963 he served as the Industrial Truck Association's delegate to ten meetings in Europe of the corresponding European material handling association and to many of that organization's subcommittee meetings. This work resulted in the adoption of mutually consistent engineering standards for industrial trucks on both sides of the Atlantic. He also represented the United States in 1964 and 1965 at meetings in Paris, London, and Munich of ISO/TC 110, Industrial Trucks. In national standards work he was chairman of the subcommittee on design and construction for Committee B56 Safety Code for Powered Industrial Trucks, which operates under ASA procedures. Before assuming his present position at Clark Equipment Company, Mr. Hastings had been director of engineering of the company's International Division, which had its headquarters in Belgium. Previously, he had been chief engineer of the Industrial Truck Division. Other experience in the field has been with the Lewis-Shepard Company, which he served as chief engineer. Mr. Hastings is a member of the American Society of Mechanical Engineers, the International Material Management Society, the Society of Automotive Engineers, and the Standards Engineers Society." . . . Congratulations are due **Alexander Blakely,** recently elected Vice-president, Operations, for American Vitrified Products, Cleveland. They make vitrified and sewer pipe in 10 plants throughout the U.S. Alex makes his home at 23951 Lake Shore Blvd., Euclid, Ohio 44123. . . . The Buffalo *Evening News* ran a good profile on **Walter Bird.** "Walter W. Bird is a man who literally 'wrote the book' for other companies to start an industry and then decided to get into the business on his own book. This seemingly paradoxical turn of events is not at all inappropriate for Mr. Bird. He is first and foremost, a man of great creative talents—an aeronautical engineer by education and a one-time designer of airplanes and streamlined trains. Mr. Bird the businessman came next. An intense, articulate man Mr. Bird, at 53, now is president of thriving Birdair Structures Inc. of Buffalo, a company he formed 10 years ago with four fellow employees at Cornell Aeronautical Laboratory to produce fabric structures supported only by air. It is a strange business whose products were scoffed at in the beginning. But the design principles were 'proved out' by Mr. Bird's task force during his nearly ten years at Cornell Lab, where the world's first modern air-supported structures were created shortly after World War II. Cornell Lab is not interested in producing commercial products, so it was only natural that it made the technical information on air buildings available to several rubber companies to make radomes. Radomes are bubble-like air supported fabric structures that house searching radar antennas guarding the continent. Not only did Mr.

Bird serve as consultant on radomes to the rubber companies, but he also wrote a manual for the Air Force on the design of air-supported structures. Mr. Bird never did try to compete directly with the rubber companies in the type of air buildings he built at Birdair, preferring instead to create his own ideas. He had a solid background. Mr. Bird, a graduate of the Massachusetts Institute of Technology in 1934 in aeronautical engineering, said his first job, as a graduate engineer, was with the Pullman-Standard Car Manufacturing Company in Chicago. 'I worked on the development of streamlined trains,' Mr. Bird recalls. 'They paid me the magnificent sum of $18 a week.' After two years on the job he was awarded a fellowship, under sponsorship of the Alfred P. Sloan Foundation, to do graduate work in management at M.I.T. He attained the highest academic average in his class. 'Always liked those management courses, but I never thought I'd get a chance to use them,' Mr. Bird remarked. Then came two more years with Pullman-Standard, now a division of Pullman Inc. and more train designing. Oddly Birdair's main plant is a part of the former Pullman car shops at 1800 Broadway, known as the Buffalo Industrial Park. 'I had a chance in 1939 to go to the West Coast or to Buffalo with Curtiss-Wright; I picked Buffalo,' the scholarly-looking Mr. Bird reminisces. Mr. Bird served in Curtiss-Wright's former Kenmore Ave. plant and in the Genesee St. plant now the Westinghouse plant, where he became head of the stress section in the engineering laboratory. Among the planes Mr. Bird worked on was the P-40 fighter which saw a lot of service during World War II. When the Curtiss aircraft plants here were closed after World War II, Mr. Bird 'went across the street' to Cornell Aeronautical Laboratory which had been given to Cornell University by Curtiss. 'I was a little afraid of going to the laboratory; thought it would be a little long-haired—writing reports and such things,' he remembers. Mr. Bird actually did leave Cornell Lab for a few months for a job in New York and then came back when he was 'given a chance to build hardware.' The 'hardware' turned out to be the air-supported Structure project. He shepherded it through its nine-year development stage at the lab. Today Birdair makes a wide range of structures supported by air forced into them by blowers for the government, industry, commercial enterprises, schools and individuals. They're made in fantastic shapes to suit the use and in sizes—so far at least—as tall as a 17-story building. Mr. Bird thinks an air building can be built of nearly any size big enough to house a huge sports stadium, for instance, or even a farm." . . . **Gerald Hudson** tells us "presently engaged on a research project for the design of simplified symbols and coding systems (architectural, engineering, etc.) compatible with electronic computers. P.S. All four of our kiddos now married." . . . **Horace Woodward** is in Research and Development with victory engineering Company, Springfield, N.J. He claims to make the fastest thermistors in the East! His oldest, Nancy, graduated from Hanover Park H.S. and Patty, Niel, Chris and Karen are "new-mathing." . . . **Warren Kunz** writes, "Still molding rubber for Acushnet Process Company in New Bedford as Manager of Project Engineering, and doing sailing and limited cruising in my Peapsen Ariel sloop. Three enchanting grandchildren! All three have M.I.T. daddies (Dale Rice, Randall Kunz) as well as M.I.T. grandpa. . . . **John Haines** says, "Now with Allis-Chalmers helping finish up the Pathfinder reactor plant (Sioux Falls, South Dakota)" . . . **Jerry Minter** is President of Components Corporation, manufacturers of specialized electronic devices in Denville, N. J. His oldest boy is at U. of Virginia law school, his second oldest is majoring in history at Loyola University.—**James T. Eder,** Secretary, 1 Lockwood Rd., Riverside, Conn.; **Norman Krim,** 15 Fox Lane, Newton Center, Mass. 02159; **W. Olmstead Wright,** 1003 Howard St., Wheaton, Ill.; **Kendrick H. Lippitt,** 8735 Delgany Ave. Apt. 211, Playa Del Rey, Calif. 90291

'35

Dear Classmates: Assuming the task of class reporter—news columnist, if you will—has done something for me which I'd like to pass on to you, with the hope that it will have the same effect on you and thereby make the task more enjoyable to me and more fruitful for you. All of us have now spent more than half of our lives objectively chasing the elusive, if diminishing, dollar—true, some with more success than others. I daresay, though, that the majority has reached the point where fear of want for ourselves and our dependents through our remaining years no longer exists. Shouldn't we then spend a bit more of our time on subjective interests towards our own betterment, and that of our loved ones, our friends, associates, neighbors, and communities? Many of you, I'm sure, are doing this already. Writing these notes for you is one such outlet for me. But Alas! One likes to know that his efforts are reaching others. You, no doubt, become discouraged when you've received no reply to three or four letters and finally stop writing to that person. Your news columnist can similarly become discouraged, but must continue because he is writing to and for all of you. I've heard it said that half the class doesn't read the Class Notes because all we ever write about is the Stockmayers, Colbys, Mowatts, Bemises, a few others, and golf. This would mean, of course, that none reads them because I'm sure the other half doesn't even receive the *Review*. I refuse to believe this. To confirm this belief, here is a test. I've picked at random the name of classmate **Joseph H. Lancor, Jr.** who has recently—if ever—been mentioned in our class notes. If I do not receive a letter from him or a classmate who has kept in touch with him within three weeks of the appearance of these notes, my belief will be shattered. Joe's most recent address is Consolidated Electrodynamics Corporation, 360 Sierra Madre Villa, Pasadena, Calif. Don't let me down fellows! To those critics who'd like to read about the doings of others in our class, I can say only that we print the news we get. You are the ones who can change all that. But enough of such philosophizing. I do have a little news to report. I'll start with a few address changes: **Joseph T. Cook**—122 North Riverside Ave., Red Bank, N.J. 07701; **Michael G. Kelakos**—American Embassy, APO 794, New York, N.Y. 09672; and **Henry F. King**—121 Westport Drive, Pittsburgh, Pa. 15238. How about a note from each of you fellows?

Class President **Allan Mowatt** reports in an informative letter that eleven '35ers attended the Alumni Officers' Conference in September. They were Bissell Alderman, Randy Antonsen, Rufus Applegarth, William Bates, Bennett Beede, Dexter Clough, Charles Debes, Ted Earl, Pete Grant, Allan Mowatt, and Bernie Nelson. At the AOC banquet our **Bob Forster** was awarded the Bronze Beaver for his exemplary efforts in behalf of the Alumni Association. Allan concurrently convened a '35 Class meeting attended by Bill Abramowitz, Appey Applegarth, Randy Antonsen, Leo Beckwith, Bennett Beede, Charles Debes, Bob Forster, Allan, and Bernie Nelson. They voted a class dues assessment to replenish an empty larder—you'll receive a bill directly. Our 40th Reunion Class gift was discussed at length. Our goal is in excess of one million, a figure exceeded by the two most recent 40th Reunion classes. As a start toward this goal our class already has about $250,000 in pledges. **Leo Beckwith,** our class agent, will be in touch with most of you. **Charles Debes** is co-chairman of the Special Gifts group. Allan also appointed **Bob Forster**—he did a splendid job for our 30th Reunion—as our 35th Reunion Chairman, pending his acceptance, and will explore with him '35th Reunion details, already planned for the Oyster Harbor Club in Osterville, Mass. **Jack Colby** and **Ed Loewenstein** sent me notes advising that they would gather more news later. Jack reports seeing **Jack Ballard** who had just returned from an enjoyable European trip with his family. Ed also reported that he had enjoyed a recent European trip, but had had to take off without his wife, Frances, and his daughter, Laura. The latter had contracted glandular fever at the last moment. Fortunately they were able to join him later in Rome for part of the tour. Ed and Frances, who are awaiting their first grandchild, extend invitations to any classmates coming their way to enjoy a visit, a swim, and possibly a sail on their sloop. Last but not least, **Art Cohen** reports moving his architectural office from Copley Square to 12 Green St., Woburn, Mass., 01801. He is specializing in churches, temples, and apartments for senior citizens. Art's younger daughter Eileen, a senior at Smith College, has been elected to Phi Beta Kappa; and his older daughter Selma, a graduate student in social work at Columbia, is engaged to Mark Sandler who is at the Columbia U. Law School. As we go to press it has just been announced that the winner of our 1966 class golf tourney is yours truly —**Hamilton H. Dow,** Apt. P-550, Devon-

Strafford Apts., Devon, Pa. 19333, Co-secretary; Regional Secretaries: **Arthur C. Marquardt, Jr.,** 178 Mt. Vernon St., Dedham, Mass. 02026; **John H. Colby,** Rt #1, Box 91A, Islamorada, Fla. 33036; **Edward Loewenstein,** 444 Cornwallis Drive, Greenboro, N.C. 27408

'36

Along with their contributions to the Alumni Fund several classmates have sent along tidbits. **Robert Sawyer** writes from Seattle, "with Wyatt and Kipper Engineers . . . project engineer on power plant construction. Our three sons 9 to 17 keep us busy. . . . **Boynton Beckwith** writes that he missed our reunion because his oldest son Brian was receiving his B.A. at Berkeley. Brian has gone on to law school. Another son is a junior at Lewis and Clark in Portland, Ore. A daughter Robin is married to a naval lieutenant and living in Honolulu. The Beckwiths have a granddaughter. On August first Boynton completed 30 years with United Airlines for which he is manager of meteorolgy. Although his headquarters are at O'Hare (P.O. Box 8800, O'Hare International Airport, Chicago, Ill. 60666), he does considerable traveling (by air, natch!) in connection with national committee work on industry matters, weather modification and clear air turbulence. . . . **Halsey Weaver** reports from Manchester, N.H., that he is still trying to make a living building state highways as president of Weaver Brothers Construction Company, Inc. . . . That big operator **Laddie Reday** is buying out Servisoft of Orange Coast from his firm—Water Treatment Corporation for which he has served as a vice-president and general manager of the Western Division. He'll need a quarter of a million dollars and lots of luck. We certainly can help by wishing him the latter! **Hank Lippitt** sent in a bulletin of the Western Oil and Gas Association which contained the news that **Allen Horton** has been named secretary-treasurer of Chevron Chemical Company, a subsidiary of Standard Oil Company of California. . . . **Donald Kenny** has been elected a vice-president of Rohm and Haas Company. He has been with the company since 1945 and most recently has been Production Manager of the Chemicals Division. . . . **John D. Viola** has been appointed Assistant Manager, Plant and Facilities, at the MITRE Corporation where he has been a Project Engineer since 1962. . . . **Charlie Saffer** has moved from Thiokol Chemical Company to the Sonneborn Division of Witco Chemical Company, Inc., where he is now technical director, activated carbon. . . . **Bob Woodward** received another honorary degree, this time from Stonehill College. . . . Two of our graduate members are in the news: **George Bair,** director of technical staff services for Corning Glass Works, is currently president of the American Ceramics Society. . . . In May *Science Investment Reports* made a feature recommendation of the Hewlett-Packard Company of which **William Hewlett** is a founder. It is the "world's leading producer of test and measurement instruments for electronics and other scientific applications.

The mailbag contains 43 change of address slips—many of them additions of zip code. I'll leave it to each of you to supply these on your personal correspondence and will only report changes of significance: **Earle Anderson**'s is Wawbeek Road, Melvin Village, N.H. 05850; **Howard L. Anderson,** 5711 Lancaster Drive, San Diego 92120; **Arthur Baker** from Maine to Arizona (Box 597 Chandler 85224); Capt. **C. Donald Brown** to 6413 Lyric Lane, Falls Church, Va. 22044, from the Canal Zone; **Gerald Chapman** back to Lee, Mass., (Research Department, Peter J. Schweitzer Div., Kimberly Clark Corp., 02138) from Port Huron, Michigan; **Jackson Cook,** P.O. Box 685, Patten Lane, Chatham, Mass. 02633; Major General **William M. Creasy,** 613 W. 27th Ave., Pine Bluffs, Ark. 71601; **Francis Danforth** from Newtown, Conn., to 151 Duncan Ave., Paris, Ky. 40361. **Aurelius Hornor** is now in Richmond, Va. 23218 (Reynolds Metal Company, 3rd and Grace Streets); **Loreto Lombardi** has moved from Groton, Conn. to Apt. C, 731 So. Jefferson, Napa, Calif. 94558. **"Bus" Schliemann** has moved to Allied Research Associates, P.O. Box 536, Baltimore 21203. **Stanley Stolz** is with the Bureau of Environmental Sanitation of the Department of Health, Christiansted, St. Croix, Virgin Islands 00820; and **Lee Tolman** has moved from Albuquerque to Moline, Ill. (4819—48th Ave., 61265). Your Secretary hopes she hasn't omitted any vital changes and wants you to remember that her address remains unchanged.—**Alice H. Kimball,** Secretary, 20 Everett Avenue, Winchester, Mass. 01890

Norman A. Matthews, '37

'37

Norm Matthews has been transferred to the Washington district office of The International Nickel Company where he will be engaged in market development activities. Joining International Nickel in 1961 as a group leader in the ferrous section of the Company's Bayonne, New Jersey, Research Laboratory, he has been since 1962 group leader of ferrous product development in the development and research department in New York. . . . **Bob Brauer** of the employee and public relations department of American Oil Company has become consultant, employee relations for the transportation department. Bob joined the company in 1938 as a chemical engineer in the Whiting, Ind., research laboratories. After service also at the Wood River, Ill., refinery he was transferred to the General Office manufacturing department and then in 1958 to the employee relations department. . . . **Vincent Kron,** M.D. has joined American Oil Company as staff physician in the general office medical department at Chicago. Vincent has been in private practice. He was previously director of health and safety at Illinois Institute of Technology Research Institute, Chicago plant medical director of Campbell Soup Company, and civilian supervisor in charge of the industrial dispensary at Bremerton, Wash., naval shipyards. . . . Perry, Dean, Hepburn and Stewart, Boston architectural firm, announces the appointment of **Conover Fitch, Jr.,** as a partner. He will be in charge of the firm's new Department of Preservation and Restoration. A resident of Nahant, Conover has been with the firm twenty-five years, the past seven as an associate. He is particularly well-known among preservationsts for his work in restoring the Saugus Iron Works and Wye Church in Maryland. . . .**Phil Scarito** has been promoted to the position of Plant Manager of the vinyl resin operation of Tenneco Plastics Division of Tenneco Chemicals, Inc., at Burlington, N.J. Phil had previously served as Plant Manager for both of the other company operations at East Brunswick, and most recently at Flemington. He is married and resides with his wife and three children at 2 Birch Ave., Pennington, N.J. **Phil Peters,** our class President, is also President of the Boston Rotary Club this year.—**Robert H. Thorson,** Secretary, 506 Riverside Ave., Medford, Mass. 02155; Prof. **Curtiss Powell,** Assistant Secretary, Rm. 5-325, M.I.T., Cambridge, Mass. 02142; **Jerome Salny,** Assistant Secretary, Egbert Hill, Morristown, N.J.

'39

An announcement card from Frederic R. Harris (Belgium) S.A., Consulting Engineers, indicates that **Frederick A. F. Cooke** has been named General Manager, with the new address of 80 Rue De Livourne, Brussels, Belgium. Fred wrote on the back, "The Cookes continue their 'tour' in Europe after less than a year in The Hague. Good thing we didn't devote too much energy to learning Dutch. Now we'll have to work on the French! Best regards, Fred." . . . **Benjamin H. Spurlock, Jr.,** II, professor of mechanical engineering at the University of Colorado, has been elected director and regional chairman of the Rocky Mountain Chapter (Region IX) of the American Society of Heating, Refrigeration and Air Conditioning Engineers. Ben is a Fellow of ASHRE and has been long active in Society work. He currently is serving on the Committees for Thermodynamics and Evaporative Coolers. . . . Dr. **John T. Massengale** (V-Grad) has been named section leader of the Plastic Film Section of the Film Operations Research and Development Department, American Viscose Division, FMC Corporation. John, a member of the American Chemical Society, joined American Viscose in 1955 and has held several supervisory positions in Film Operations Research. He and his wife and three children live in West Chester, Pa. . . . Colonel **Latimer W. MacMillan** (VI)

commands the U.S. Army Strategic Communications Command (Stratcom) Pacific, which operates the ground communication terminal at Helemano, Oahu, Hawaii. This terminal relays military traffic through the seven military communications satellites which were launched from Cape Kennedy on June 16, 1966. . . . Here's an excellent letter from **Richard Hanau** (VIII), Professor of Physics at the University of Kentucky, in Lexington. Dick, who lives at 933 Wolf Run Road, Lexington 40504, wrote on September 16: "Before the academic year gets too far along—we've already had over two weeks of classes—I should tell you what Laia (wife) and I did this summer. We spent three fantastic months in India on a USAID project, traveling some 15,000 miles the length and breadth of the country. My job as a supervisor of nine summer institutes for college physics teachers involved planning the academic programs, solving the problems that arose during the institute, and post-institute evaluation. In addition to physics, there were institutes in mathematics, chemistry, engineering, biology, geology, and science teaching, both for high school and college teachers. Some 100 institutes, staffed by perhaps 500 Indian professors and 250 U.S. professors, were attended by some 4200 Indian teachers. It should be of interest to '39ers to know that the physics institutes used **Dick Feynman's** *Lectures on Physics*. These three volumes are now published in India by photo-offset, and are available to Indian students at about one-third the price of the U.S. edition. The problems India faces are enormous and almost insoluble. One has to remember this when analysing the results or efforts of past years. There are too many people in the country, and the population growth is too large. During the dry season there is not enough water, and during the monsoon there is too much. There are insufficient dams, hence flooding, irrigation, and sporadic electrical power are perennial problems. The summers are fierce and hence the pace of the worker is slow. One characteristic of India which we found so interesting is that one can find there widely different religions, languages, cultures, housing conditions, living standards. Yet with all the strange sights, unfamiliar language, pitiful beggars, swarms of people, one feels perfectly safe to roam the streets, day or night. There is no feeling of visciousness; 'live and let live' could be their motto. Would that we could say as much for the streets of urban U.S.A.!"—**Oswald Stewart,** Secretary, 3395 Green Meadow Circle, Bethlehem, Pa. 18017

'40

Frank Bothwell, Director of the Center for Naval Analyses, is in the news in view of the proposed enlargement of the Center's professional staff by 15 to 20% in the coming year. CNA, which is a private research organization, furnishes the Navy and Marine Corps with operations research, systems evaluation and other analytical services. . . . Colonel **George**

U.S. ARMY PHOTOGRAPH

Colonel Latimer W. MacMillan, Jr., '39, (and Annette Yoshida, Miss Stratcom-Pacific) assist Governor John A. Burns of Hawaii at ceremonies dedicating the first earth terminal of the Army's satellite communications system.

Weinbrenner has been named Deputy Chief of Staff for Foreign Technology at the Air Force Systems Command headquarters. . . . Several members of our class are actively aiding the Alumni Fund as Regional Chairmen. **Bruce Duffett** is Chairman in Chappaqua, N.Y.; **Walter Helmreich** is Chairman in Ann Arbor, Mich.; **Joe Paine** is Chairman in Baltimore, Md,; and **Nathan Sherman** is Chairman in Sudbury, Mass. This ends the '40 notes for 1966 with the wish that you all have a pleasant Christmas and a successful and healthy New Year.—**Alvin Guttag,** Secretary, Cushman, Darby & Cushman, American Security Building, Washington, D.C. 20005

'41

With **Howy Samuels** being nominated as the Democratic Party candidate for lieutenant governor of New York, he is demonstrating by his sound platform aimed at expanding economic and social opportunities that an engineering education with its rigorous training in straight thinking can be an asset even to political figures seeking high elective office. . . . Dr. **Teddy F. Walkowicz** has recently been elected a director of the Cerro Corporation. Teddy is presently an associate of the Rockefeller Family & Associates as well as a director of FMA, Inc., GCA Corporation, Itek Corporation, Marquardt Corporation, Mithras, Inc., National Aviation Corporation, Thiokol Chemical Corporation and United Nuclear Corporation. His past public service activities include serving as a consultant to the Hoover Commission (1954-55) and to the Disarmament Office of the President (1955-58), as well as the Aviation Facilities Study Group (1955-56) and the USAF Scientific Advisory Board (1952-62). A native of Webster, Mass., he received his Master of Science degree in 1944 from the California Institute of Technology and Doctor of Science degree in 1948 from M.I.T. He is a trustee of the Sloan-Kettering Institute for Cancer Research, the Air Force Village Foundation, and St. David's School, and a director of the Hertz Foundation. . . . Dr. **George H. Vineyard** has been appointed Associate Director of Brookhaven National Laboratory and will succeed to the post of Laboratory Deputy Director next year when the present incumbant is scheduled to retire. George has been Chairman of the Brookhaven Physics Department since 1961 and has been associated with Brookhaven as a physicist and a senior physicist since 1954. His research includes work on the application of neutrons to solid state physics, radiation effects on solids, and structural imperfections in solids. He was born in St. Joseph, Mo., in 1920 and received his Ph.D. degree in physics from M.I.T. in 1943. After spending three years at the M.I.T. Radiation Laboratory, he joined the faculty of the University of Missouri where he became a Professor of Physics in 1952. He resides with his wife Phyllis and two children, John, a sophomore at Oberlin College, and Barbara, a sophomore at Bellport High School, in Bellport, Long Island. Brookhaven National Laboratory, which is operated under contract with the U.S. Atomic Energy Commission by Associated Universities, Inc., employs over 3500 people who carry out a broad program of basic research in a variety of fields including biology, chemistry, mathematics, medicine, nuclear engineering, and physics. . . . Dr. Charles H. Townes, a Nobel Laureate and an honorary member of Class '41, has been elected a director of the Perkin-Elmer Corporation of Norwalk, Conn. . . . **Herbert E. Hirschland,** group vice-president in charge of research and development for M&T Chemicals Inc. has been assigned additional duties of administering M&T's marketing division operations. Herbert is also a director and member of the executive advisory committee of M&T, a wholly owned subsidiary of American Can Company and a major supplier of organic and inorganic chemicals, metal finishing processes and equipment, as well as special chemicals for the ceramics industry and organic coatings and detinner of tinplate scrap. He joined the company in 1941 as a process engineer and became a director of the research laboratory at Rahway, N.J., in 1952, manager of Market Research Department in 1955 and director of the Commercial Development Division in 1958. In 1959 he was elected vice-president for commerical development and in 1961 was named a group vice-president for commercial development and research. He was elected to the board of directors in 1964. A graduate of Dartmouth College in the Class of 1939, with a bachelor's degree in chemistry, he received his M.S. degree in Chemical engineering from M.I.T. in 1941. . . . Dr. **Robert M. Fano** is the co-author of an article entitled "Time-Sharing On Computers" appearing in the September 1966 issue of *Scientific American* which explains the state of the art in "time-sharing" computers with diagrams of construction and samples of program operations. The article is well worth reading for its insight into the tremendous future for community use of centrally stored information and computer service on a time sharing basis as a public utility service.—**Walter J. Kreske,** Secretary, 53 State Street, Boston, Mass.; **Everett R. Acker-**

son, Assistant Secretary, 16 Vernon Street, South Braintree, Mass.; **Michael Driscoll,** Assistant Secretary, City Hall, Nantucket, Mass.

'42

I have received a nice note from **Bob Imsande.** He recently joined the Anheuser-Busch Company in St. Louis as manager of long range programs for engineering and related areas. For the previous ten years he was with General Electric, most recently as manager of resin operations at their Mt. Vernon, Ind., plant. His wife and two daughters are enjoying their new home in the suburbs of St. Louis. Barbara, 18, is in her freshman year at Earlham College, and Beverly, 15, is a junior in high school. "Both Betty and I are looking forward to the 25th reunion next year; we've made the fifth and the fifteenth to date. Hope to see you and most of the rest of '42 at that time." . . . **Fred Dierks,** who is president of Dierks Forests, Inc., in Hot Springs, reports that things are going well for him. His oldest daughter was married last year and is living in Cheyenne, Wyo. Their middle daughter, 20, is now in her junior year at the University of Arkansas. The youngest, Kathy, 6, is in sixth grade. . . . Dr. **David Van Meter** has been appointed Chief of the Computer Research Laboratory at NASA's Electronics Research Center in Cambridge, Mass. Dr. Van Meter joined NASA from Litton Industries, where he had been manager of the Information Sciences Laboratory in Waltham, Mass. He will be responsible for computer research programs directed at future requirements for space exploration. . . . **Phil Phaneuf** is Commander and Contracting Officer for the Corps of Engineer Ballistic Missile Construction Officer (CEBMCO), the construction agency for the Air Force, Ballistic System Division—Air Force System Command. Phil and his wife Lucille are among the many planning to come to the reunion. I was most interested to note in his letter that they have seven children—one in college, two in high school, one in junior high, two in grade school, and the last just starting to walk! . . . **Carthrae Laffoon** wrote an article recently for *Investment Dealers' Digest* on desalination. He is vice-president, electric, San Diego Gas & Electric Company, which he joined in 1950. He was appointed vice-president, production and transmission in September 1963 and assumed his present position in September 1965. He has had a key role in the company's nuclear and desalination program since 1957. He also serves on committees of the San Diego and State Chamber of Commerce, is vice-president of the San Diego M.I.T. Alumni Club, is a director of the San Diego Industry-Education Council, is a member of the Southern California Water Conference, and is a Registered Professional Engineer in California. . . . **Warren Twaddle** co-authored an article in *Chemical Engineering Progress* entitled "Evaluating and Sizing New Chemical Plants." Warren is manager of Economic Analysis and Planning and a member of the Management Committee for Amoco Chemical Corporation, located in Chicago. By attending evening classes, he received an MBA from the Executive Program at the University of Chicago in 1964. Finally, it is my sad duty to report the death of Captain **Ernest P. Abrahamson,** who was a graduate student with us. Unfortunately, I have no details.—**John W. Sheetz, 3rd.,** Secretary, 45 Rutledge Road, Belmont, Mass. 02178

'43

It is my sad duty to report the tragic and unexpected death on October 2 of **Paul C. Grosse** at the age of 44. Paul had been very ill for three weeks with what had been tentatively diagnosed as viral polyneuritis but no one, including a nationally prominent specialist, had suspected he would not recover. At the time of his death Paul was manager of the Control Systems Section at the Raytheon Company in Wayland, Mass. Paul grew up in Milton, Mass., where, in 1939, he won the Thomas Boylston Science Prize for the high school student showing the greatest promise. After graduation from M.I.T., he became an instructor in M.I.T.'s Radiation Laboratory and then, in 1946, joined the staff of the Navy's General Line School in Newport, R.I., as an instructor in electrical engineering and mathematics. After a year at the Martin Company in Baltimore in 1948-49, he went to the American Machine & Foundry Company in Boston as an electronics engineer where he stayed until going with Raytheon in 1952. Here he became recognized as an expert in the field of servomechanisms. In private life Paul was known for his talent as an artist specializing in watercolors. Survivors include his wife, Lucille; three daughters: Heidi, 5, Christine, 12, and Paula, 15; his mother and two brothers, John and Ernest. . . . We wish to thank Fletcher Eaton, Secretary of the Class of 1949, for contributing the above Class Notes for this issue.—**Richard M. Feingold,** Secretary, Ritter & Berman, 266 Pearl Street, Hartford, Conn. 06103

'44

John H. Kellogg of Nashua, N.H., has been named executive vice-president of Lytron, Inc., of Woburn, Mass., according to a press release of June. Lytron manufactures heat exchangers and heaters for aerospace and electronic industries and laboratories. John went to Lytron from Sanders Associates, Inc., also of Nashua. At Sanders he was "part of the management team that saw the company increase its annual sales from $10 million to nearly $70 million during the seven years that he was there." Prior to his post with Sanders Associates, John was executive vice-president of Electric Products Company, Cleveland, Ohio, manufacturer of special industrial electrical equipment. John has not only his M.I.T. degree in mechanical engineering. In 1951 he graduated from Harvard Law School. A native of Cleveland, he returned to practice corporation law in Ohio for several

John H. Kellogg, '44

years. He maintains his interest and contracts in both law and engineering. He is a member of the Institute of Electrical and Electronic Engineers, the American Bar Association, the New Hampshire and Ohio Bar Associations, and the New England Council. The breadth of his interests and activity is further indicated by the following: He is a trustee of the Nashua Symphony Association, former Area Chairman of the American Cancer Society, a member of the Nashua Country Club, the Nashua Chamber of Commerce, and U. S. Power Squadrons. He has had a lifelong hobby of woodworking. He has built furniture and several boats. Nowadays most of his recreational time is spent sailing or skiing with his family. The press release further states that John's wife is the former Annabelle Cook. They have three children and reside in Nashua. The press release also notes that while at M.I.T. John worked closely with Professor E. P. Neumann who was president of Lytron until his death. I expect that John will see these notes. He is a recipient and presumably a reader of the *Review.* . . . Another reader is **James B. Weaver.** A press release of September 21 from Wilmington, Del., informs us of a realignment of functions at Atlas Chemical Industries Inc., of Wilmington. The functions of the former development appraisal of which Jim has been director have been broadened to strengthen planning for diversification. To reflect its wider role in company planning, the department name has been changed to corporate planning and appraisal. The department now has five sections including a new venture appraisal section to evaluate strategies for growth and analyze proposed acquisitions. Jim joined Atlas in 1954 and has been director of the development appraisal department since 1959. . . . **Henry Cohen,** 210 W. 90th St., New York, N.Y., writes that on August 15 he was named First Deputy Administrator for Planning and Budgeting in the New York City Human Resources Administration. . . . **Raymond F. Kelley, Jr.,** now of 195 N. Green Bay Road, Lake Forest, Ill., tells us that he has moved from St. Louis, Mo. He has been promoted to an executive staff posi-

PHOTO: LABITSH & BUNGARZ

James B. Weaver, '44

tion as Product Manager of the "Abex" Corporation, Amsco Division. . . . By letter to the Alumni Association we have just received word that Capt. **Juan C. Pereira,** who received his Masters Degree in Aeronautical Engineering with our class, died on January 1, 1966. He lived at Blanco Encalada 2751, Buenos Aires, Argentina. No other details are available at this writing. . . . Although it is only mid-October as these notes are written, it is time to wish all of you a merry Christmas and a happy New Year. And while you are sending those Christmas cards and letters, keep in mind your classmates, especially your class secretariat which presently consists of **Paul M. Robinson, Jr.,** Secretary, 7710 Jansen Drive, Springfield, Va. 22150, 703-451-8580; **Paul M. Heilman, 2d,** Assistant Secretary, 30 Ellery Lane, Westport, Conn. 06880, 203-227-3469; **John G. Barmby,** Assistant Secretary, IIT Research Institute, 1200 17th St., N.W., Washington, D.C. 20036, 202-292-1610

'45

It seems strange to be wishing you all a joyous Holiday and a prosperous New Year on a gorgeous Indian Summer day in mid-October. Our apologies for not being with you in November but even I cannot begrudge my secretary and her European vacation (if I did I doubt if these notes would be typed!). Yes, we have two sons at M.I.T.—Nickie Mumford, son of **Nick** and Rosemary **Mumford,** as well as Jim Pickel, son of **Jim** and Carolyn **Pickel.** Any others? Prexy **Tom Hewson** reports that Charlie Hart, Joseph Amrhein, Bill Meade, Tom McNamara, Warren Miller, Jim Pickel and Bill Shuman attended Alumni Day last June. You will recall that the July issue reported the details of this festive occasion. The Seventh Alumni Officers Conference on September 9-10 found the following '45ers in attendance: Curt Beck, Bob Maglathlin, Bill Martin, Bud Wilson, Jim Levitan—a Columbia University lawyer practicing in Manhattan, Donald J. Lovell—a Professor at Michigan in Ann Arbor, and yours truly. It was especially enjoyable to talk with **Curt Beck,** the pride of Pampa, Texas, after these many years. Curt, still with Cabot Corporation, is on a sabbatical year at the Institute's Center for Advanced Engineering. The Becks have rented a home in Lexington and Curt looks forward to taking random courses in chemical engineering. Curt reports that he is taking anew a couple of undergraduate courses he endured with difficulty in the early 40's! . . . **Bob Maglathlin,** still enjoying his R&D work at Sylvania, welcomes the end of his School Board Presidency in Norwell, Mass., although he is still called upon to "referee" School Board differences. You will recall that Bob, before his capital gains, was President and a principal owner of Electronic Systems, Inc. . . . **Bill Martin** continues as President of Decision Systems, Inc., a digital system designer and manufacturer in Rockville, Md. Bill has been treasurer of the M.I.T. Club of Washington and serves as a member of the Educational Council. . . . **Bud Wilson** of Bala-Cynwyd, Pa., walked with a slight limp. At first we suspected a mountain climbing accident, but our inquiry indicated that it was the result or remains of a skiing accident. Even athletic Bud is growing older! Bud is Manager, Navigation and Control Subsystem Engineering, Re-entry Systems Department, General Electric, Philadelphia—a new assignment after 13 years of R&D General Electric-Schenectady. The Wilsons are the proud parents of seven ranging from David 16 down to Julie 2. One of the highlights of the year's conference was the dedication of the Harold Whitworth Pierce Boathouse halfway between the old Grad House and the DKE House. Jack Frailey '44, the crew coach, who you all remember, gave a most enjoyable speech as he reminisced the past 25 years of his association with the crew. The only '45 oarsman on hand was **Jim Levitan,** our fellow Stamfordite, but I am certain that all '45 crewmen were there in spirit. Quite a contrast between the new and old! I especially enjoyed seeing Bill Kalb '44 in from Detroit with two sons, as well as Bill Grant '48 and Bob Weber '50. After a night of revelry a hearty few took to the oars the next morning at about 7:00 A.M.!

In early spring President **Bill Loeb** of Chappaqua, N.Y., announced the formation of Iso Nuclear Corporation, a manufacturer of products and materials using nuclear radiation processes. The firm's first product will be woods and wood veneers in which long-wearing plastics are polymerized within the wood fibers to give many of the properties of high pressure printed laminated melamine surfaces. Construction has started on a plant capable of producing 43,000,000 sq. ft. of veneer a year for use in furniture and floor tiles. Also to be produced in the future will be canned fresh meats for the armed services and commercial markets. Bill, as many of you will recall, was formerly Chief Engineer of United Nuclear Corporation. . . . Capt. **Preston N. Shamer** is now in Washington having completed his tour as Deputy Chief of Staff CINCPACFLT in August. . . . **John W. Morrison** of Tempe, Ariz., has been teaching physics and chemistry at Alhambra High School. . . . The July 2 issue of the *New York Times* reported on **Isaac Goodbar**'s patent for a new plastic lens which eliminates both directed and reflected glare from lighting fixtures. Isaac's patent was assigned to Edison Price, Inc., New York, of which he is chief engineer. Mr. Goodbar is co-inventor with Edison Price of a projector screen patented this year; last year he patented a street lamp designed to protect motorists' eyes both in dry and wet weather. **Nick Mumford** reports that Hap Poole, '48, formerly with Walter Kidde in New Jersey, is now working in the missile controls area with Chandler Evans, Hartford, Conn. . . . **George M. Berman,** Vice-president of Unitrode Corporation in Watertown, handles the marketing of Unitrode's diodes and rectifiers. The June 15th issue of the *Boston Globe* reports that the company had just gone public; I trust that it is holding up better than some of my investments! . . . **David O. Richards** heads the general products fabrication and packaging section at Owens Corning Fiberglass Technical Center in Granville, Ohio. Dave, with Fiberglass since 1945, has performed various technological duties at Newark, Ohio, the Granville Technical Center and the Barrington, N.J. plant. . . . In May **Robert M. Edholm** was appointed director of marketing by the Systems Division of Bendix Corporation in Ann Arbor, Mich. Before joining Bendix Bob was director of advance planning for the VTOL Aircraft System Division of Curtis Wright. He is a former flight test engineer for Boeing and chief test pilot for the McDonnell Aircraft Corporation. . . . An Alumni Fund reminder to **George Bickford** last June prompted a fine note from our Rochester correspondent. Curly reports that the homestead is completely renovated although he had just re-shingled the roof over the past three weekends. George feels nothing is beyond his talents after building himself a sailboat (Comet), although he does indicate that, "I sure poop out fast!" . . . A recent billfold replacement program indicates that **Jack Atwood** is Product Manager, Dyestuff & Chemical Division, General Analine and Film Corporation, New York City! . . . I know you join with me in extending sympathy to **John McCarthy**'s widow. Jack passed away on February 21. . . . **Vince Butler** has bought that new old house he promised at the 20th Reunion; the Butlers are now at 3737 Jackson Street, San Francisco. . . . **Art Hall,** after several years with Cabot in Buenos Aires, is now Managing Director of Cabot S.A. in Madrid, Spain.

At 25-Year Reunion Gift Chairman **Max Ruehrmund**'s suggestion several of us met together in New York in late September with Alumni Fund Director Ken Brock to launch this year's efforts for a bigger and better 25-Year Gift. You will remember that a $250,000 goal was established at our 20th Reunion. You have already received Prexy **Tom Hewson**'s class letter, and we trust that you have not only sent in your money but also forwarded the questionnaire to Tom in New Canaan. Tom, still Technical Director at St. Regis Paper, told about his youngest son, Teddy, attending St. Thomas' Choir School in New York. . . . **Dave Trageser** told of his most recent European trip with Mary, while Maxie proudly reported the birth of Ekra Lee on June 18. . . . **Hal Thorkilsen** not only told us of his first year as President of American Safety Razor but also of a recent cab ride in which the driver almost ran down one **Larry Van Ingen! Bill McKay** has resigned or retired as Class Agent and Max has agreed to carry forth this year awaiting **Jerry Quinnan**'s appointment in the spring.—**C. H. Springer,** Secretary, c/o Firemen's Mutual Insurance Company, 420 Lexington Avenue, New York, N.Y. 10017

'46

In the last issue Bill Cahill's superb reunion report mentioned the resolution that was drawn up and voted on at reunion time for the purpose of trying to express

the class's appreciation for the outstanding job that **John Maynard** has performed as class secretary for the past 20 years. The following excerpts from the resolution speak for themselves. Whereas, John A. Maynard of said Class has served as the Secretary of the Class for a time so long that the mind of man runneth not to the contrary; and whereas, the regular publication of said information and data of all sundry nature has greatly contributed to the spirit and elan of the Class of 1946 of the Massachusetts Institute of Technology; and now therefore, the Class of 1946 hereby unanimously resolves: I. To accept, with thanks and regret, the resignation of John A. Maynard as its Secretary. II. To express its deep appreciation to Mr. Maynard for his long and faithful service to the Class, and hopes and requests that he will make his valuable services available to the Class in the future as the occasion permits." All those present signed and drank a toast to John. If I am not mistaken **Ted Heuchling** drank his toast from the engraved silver bowl which was later sent along with the resolution. John, if the bowl was tarnished you will know the reason why.

I have just received a number of interesting news items. Rear Admiral **Hamilton O. Hauck** became President and Chief Executive, in August 1965, of Infrared Industries, Inc., Santa Barbara, Calif., and Waltham, Mass. . . . **Samuel Meerbaum** recently moved with family to California and is now Project Scientist with Rocketdyne's Research Department. Daughter Monica is at Smith College, Northampton, Mass., Lynn is about to enter Taft Senior High, Julie is in grade school and wife Nora studies at Pierce College, Woodland Hills, Calif. . . . **Clifton B. Sibley** and family have been living in Geneva, Switzerland, for the past two years. He is currently Technical Manager of NCR Europe in St. Julien France which started out small (3 a year ago) but is rapidly growing (now 25 employed). He reluctantly admits the children, all five, are way ahead of their parents in the language department and are having a difficult time keeping up. He hasn't had much time to travel but got in some really good skiing. . . . **Robert E. Latimer** has been promoted to Colonel in the Corps of Engineers, U.S. Army Reserve and has a mobilization designee assignment in the Department of the Army Headquarters, Office of the Chief of Research and Development, Army Research Office. He is currently working for American Cryogenics, Inc., a subsidiary of Standard Oil Company of New Jersey, in Georgia. . . . **John Voneiff** and family now reside in Rockville, Md. He is Real Estate Agent for Sam E. Bogley in Maryland. They have had an addition to their family, a girl, their fourth child, and now have three girls aged 12, 10, 1 and one boy 8 years. **David G. Black, Jr.,** of North Scituate, a patent and management specialist, has been appointed coordinator of research in the office of the president at Brown University. He will be responsible for coordinating sponsored research projects which now attract about $10,000,000 a year in outside support. He is also a director of Protective Controls, Inc., Attleboro, Mass.; Editions Ltd. Manufacturing Company, Pittsfield, Mass. and K.A.S.M. of the Netherlands. A registered professional engineer, he holds a patent on a laminated film optical device used in the electro-optical field. Here's wishing you the happiest of holidays and keep those items of mutual interest rolling.—**Donald A. Hurter,** Secretary, 40 Fisher Street, Norwood, Mass. 02062

Peter Thornton, '48

'48

Once again the Institute was a most gracious host to more than 300 alumni at the Seventh Alumni Officers' Conference this past September 9 and 10. As in the past our class had one of the largest delegations. Those in attendance included Bill Bangser, Gerry Bernstein, Hal Beumer, Marty Billett, Bob Bliss, Ken Brock, Art Brusila, Em Callahan, Tom Folger, Norm Kreisman, Bill Maley, Adolf Monosson, Jack Page, John Reid, Pete Richardson, Verity Smith, Bob Stern, George Wayne and Bob Hansen. If you have never attended one of these conferences. you've missed something! **Bob Hansen**, we learned, is a professor of civil engineering at Tech. He got his doctorate with our class. . . . Also, **Jack Page,** who not too long ago was elected a vice-president of Booz, Allen and Hamilton, was recently transferred from Chicago to set up a new office in Dallas. His new address is 4508 Hockaday Drive, Dallas, Texas 75229. . . . After taking S.B. and S.M. degrees in mechanical engineering, **Tom Folger** is now in the investment banking field as an analyst with Kidder Peabody at 20 Exchange Place in New York. Like your scribe he is still a bachelor and has, we understand, a real "Playboy" type apartment in New York which we look forward to seeing one of these days. . . . While at the Conference we also had the great pleasure of seeing a couple of our old buddies from the Class of 1947—Vince Haneman and Bob Devine. Vince, who went on to take his Ph.D. in aeronautical engineering at Michigan, is now director of engineering research at Oklahoma State University, while Bob is another one who has given up his technical specialty (metallurgy) to enter the world of investment banking. He is vice-president of Walter B. Delafield & Company, Inc., at 56 Pine Street in New York City.

Every once in a while we are elated to receive a note, letter or card from you bringing us up to date with some real first-hand news. One of these deeply appreciated notes came recently from **Chet Gates** who wrote that "on March 1st I was made vice-president, international, of the Northrop Corporation, Beverly Hills, where I have been for over 10 years. My wife Peggy and I have four daughters: Lynn, Lisa, Lori and Lana, ages 13 to 5." Many thanks, Chet. Here's hoping your example will inspire many others to do likewise. Also, our happiest congratulations on your recent promotion. (Chet's address is: Chester R. Gates, 4 Hillside Lane, Rolling Hills, Calif.). You have quite a family group, Chet. Bet when all of the girls are together you have one "L" of time!

Elmer Larrabee, S.M.-XVI, is another of our recent authors. His paper, "Small Scale Research in Automobile Aerodynamics," was published in the July issue of the *S.A.E. JOURNAL*. He is currently a professor in Tech's aero-astro department. . . . **Ed Sidd,** XX-A, has joined the flavor division of Givaudan Corporation as food technologist-flavor applications. . . . **Dick White,** XV, president of Automation Engineering Laboratory Inc., also had a paper (title not given) recently published. It appeared in the July issue of *Automation*. . . . In a recent reorganization at the Gulf Oil Corporation, the coordination duties of the chemicals department were divided into two sections, and **Bill King,** S.M.-XA, who was formerly world-wide coordinator, was named coordinator—foreign chemicals. . . . **Haig Gechijian,** IX, has been promoted to director of technical services of the MITRE Corporation. Haig, who lives at 357 Common St., Belmont, Mass., joined MITRE in 1959 as assistant plant engineer and was promoted to manager, plant and facilities, the following year. Previously he had been a staff engineer with Lincoln Laboratory for three years and with the Jarvis Engineering Company from 1948 to 1956. . . . Honeywell Inc. has formed a computer group to conduct its major activities in that field, following acquisition of Computer Control Company, Inc. last May 27. **Ben Kessel,** S.M.-VI, who had been president of CCC before its acquisition, will head the new computer control division as vice-president and general manager. Ben participated in the planning and founding of Computer Control and joined the firm in 1953 as a project engineer. He became vice-president in 1957 and president in 1959. Ben took his undergraduate degree at Texas Technological College. . . . **George Swenson,** S.M.-VI, was the subject of a profile as well as author of an article on astronomy in the June 12 issue of the Champaign-Urbana *News-Gazette*. George is professor of electrical engineering and research professor of astronomy at the University of Illinois where his research interests center around radio astronomy and the ionosphere. A faculty member since 1956, he began a two-year leave of absence in September to serve as chairman of a group of astronomers and engineers designing an enormous new radio telescope for the National Radio Astronomy Observatory. George is married and has four children. . . . Abraham & Straus, the Brooklyn-based department store group, announced last July the promotion of **Julian Taub,** II, as operating vice-president responsible for both research and quality control. He joined the A&S exec-

utive training squad in 1949 after graduation from Tech and became research director last year (1965). . . . Last June **Sheldon Kaplan** was elected president of United States Railway Equipment Company. Prior to joining the company in 1959, he was assistant to the president of the American Steel and Iron Company in Boston and later assistant to the president of Hyman-Michaels Company in Chicago. Before his promotion he served from 1964 as executive vice-president. Sheldon, his wife and two children live in Chicago. . . . **Pete Thornton,** XV, has been elected vice-president, marketing, of United States Envelope Company. Pete joined USE in 1964 as manager, operations planning, and was advanced later that year to general marketing manager. Before his association with USE Pete was assistant marketing director for the R. P. Scherer Corporation; manager, corporate volume planning, Chrysler Corporation; supervisor marketing plans, Ford Division of Ford Motor Company; and manager, manufacturing services, Permacel Division, Johnson & Johnson. In closing we extend to each and every one of you our warmest wishes for a most happy Christmas and a healthy and prosperous 1967.—**John T. Reid,** Assistant Secretary, 22 West Bryant Avenue, Springfield, N.J. 07081; **Robert R. Mott,** Secretary, Kent School, Kent, Conn. 06757; **Richard V. Baum,** Assistant Secretary, 1718 East Rancho Drive, Phoenix, Ariz.

Robert L. Wyckoff, '50

'49

Roland Jalbert has joined the staff of the Los Alamos Scientific Laboratory to work in the Health Division. Roland earned a B.S. in physics and M.S. in biophysics both at Tech. The evidence spread out here in front of me this evening shows clearly that Roland gets around since he was a Professor of Physics at the University of Alaska before travelling to New Mexico. He is a member of the American Association of Physics Teachers, the American Association for the Advancement of Science, and the Health Physics Society. He is joined in Los Alamos by his wife, Elizabeth Anne, and four children. . . . **Charlie Brekus** has been named supervisor of the 263 personnel in the engineering department of the Omaha Works of the Western Electric Company. He had been assistant superintendant of the apparatus and wiring shops for the firm in Oklahoma City. . . . **Walt Morrow** was a delegate last May to the 22nd annual meeting of the A. S. Popov Society held in Moscow. The Popov Society is the Russian equivalent of our IEEE. IEEE members from many countries attended this meeting and were impressed by the quality of the Russian technological environment. In fact one member of Walt's delegation wrote that, "it seems clear that no single academic institution in the United States can match the quantity and scope of work in progress at Moscow State University."—**Fletcher Eaton**, Secretary, 42 Perry Drive, Needham, Mass. 02192

'50

Here it is Christmas again and the time for beginning an exciting holiday season. I have nothing to offer the Class of '50 for Christmas but good wishes and a little bit of news. Unfortunately, I just finished getting myself organized these last few months and I've organized myself out of being able to find some news about classmates that I had put into my "information system." So, starting with 1967 let's get the class news rolling full speed. Meanwhile, here's what I recently heard. **Alan Bates** was promoted in the Corporate Planning Department of Atlas Chemical Industries, Inc. in Wilmington, Del. He was formerly manager of Economic Evaluation and is now manager of a newly created "venture appraisal" section. It sounds like a fascinating and challenging responsibility. Incidentally, Alan stayed on at Tech after '50 and received his M.S. degree in Course X. Then he became a process engineer at Celanese Corporation in Summit and a plant and process engineer with Union Carbide Corporation in Kentucky. . . . I just heard that **Bob Wyckoff** has been granted a patent on his invention of an oscillator capable of varied frequencies in response to digital commands to the output of a fixed frequency generator. I understand that in a radar system, Bob's invention makes possible more precise measurement of satellite and missile velocities. Bob is serving on the editorial advisory board of Raytheon's technical journal, *Electronic Progress.* If you want to contact him these days, he is living at 21 MacKay Drive in Marlboro. . . . **Don Gaver** is living the professorial life at Carnegie Tech and has been recently promoted to the rank of professor of mathematical statistics. Don received his M.S. degree from Tech after '50 and his Ph.D. from Princeton in '56. He is living at 1637 Georgetown Place in Pittsburgh and has been with Carnegie Tech since 1956. . . . **Bill Wright** has been promoted to Deputy Division Director, Division of Mathematical and Physical Sciences, at the National Science Foundation. He was previously Director of the Physical Sciences Division of the Office of Naval Research and also served as Head of the Nuclear Physics branch from 1953-1962. Bill received his Ph.D. in physics at Tech. He is a Fellow of the American Physical Society and a member of Sigma Xi, Phi Beta Kappa, American Association of Physics Teachers, American Nuclear Society and the Washington Philosophical Society. Bill is living at 5818 Greenlawn Drive, Bethesda, Md., and has four youngsters.

The following are new addresses of our classmates. You may wish to keep in touch with them by contacting them at these new locations. Dr. Curtis C. Williams, 3rd, Petroleum Processing Dept., Shell Development Company, Emeryville, Calif. 44608; Norton Belknap, Esso Standard Oil Company, GPO 4047, Sydney, NSW, Australia; Herbert E. Miller, 130 Lancaster Terrace, Brookline, Mass. 02146; John F. McCarthy, Jr., 10400 Downey Avenue, #304, Downey, Calif. 90241; Thomas C. Buchanan, 3d., 637 Brentwood Road, Orange, Conn. 06477; John H. O'Brien, Interstate Commerce Commission, Washington, D.C. 20423; Dr. Edgardo J. Parsi, 18 Bartlett Street, Watertown, Mass. 02172; David W. Wellington, Box 16, Dunstable, Mass. 01843; John J. Randazzo, The European Corporation, 23 N. Bemiston Ave., Clayton, Mo. 63105; Robert R. Quinn, 2908 Center & Irving St., Merchantville, N.J. 08109; Francis J. Winiarski, 10315 Tennessee Ave., Los Angeles, Calif. 90064; Donald O. Neilson, 7620 79th Ave. S.E., Mercer Island, Wash. 98040; Dr. William B. Nichols, Cedarcroft, Kennett Square, Pa. 19348; Charles H. Sherman, East Street, Carlisle, Mass. 01741; Dr. Paul Slepian, Rensselaer Polytechnic Institute, Department of Mathematics, Troy, N.Y. 12181; Dr. Sanford C. Spraragen, 2524 Avenue Y, Brooklyn, N.Y. 11235.—**Gabriel N. Stilian,** Secretary, 4 Biscayne Dr., Huntington, L.I., N.Y. 11743

'51

I received a telephone call from **George Boyden** shortly after the reunion; he had wanted to attend very much but his wife was infanticipating. As it was, the flag went up on Flag Day for their fourth child, fourth daughter. George is President of E. E. Specialists, Manufacturers' Reps, which he started late in '58. He has a few interesting distinctions: he advertises on Boston's classical music station (WCRB) and qualifies as a fleet owner of Checker automobiles (which he started by trading in a Mercedes). George and family live in Boxborough, Mass., but their mailing address is West Acton and their phone exchange is Lincoln—some people live exciting lives. . . . **Ralph Binney** has been appointed Sales Coordination Manager of the Foxboro Company in Foxboro, Mass. . . . Before returning to this country, **Bob Cushman** and his family (wife, Sue, plus 8), spent 18 months in Stockholm. Bob was on a one-year exchange from Argonne National Labs in Idaho and spent a six-month leave touring the continent. Their report, a full page, single spaced, typed letter, elite type, with virtually no margins, is sheer poetry. Including a picture of their VW Microbus equipped with a tent on either side and quarters for Mom and Dad on top, the letter describes such highlights as the trip from Denmark to England, and Ireland and Scotland, ". . . where crossing a moor in dense fog late in the day creates a bleakness reminiscent of Jane Eyre or Thomas Hardy—Ivanhoeish castles with rhododendrons running purple riot over all the hillsides . . .". Later visits were to Russia and then the Riviera, Italy, Greece and so on througout the Mediterranean. I wish that I had the

Ralph E. Binney, '51

space to print the entire letter. They came home on the Italian Line's new ship, the Michelangelo, and then camped their way back to Idaho. I will try to quote additional sections of their letter in a future issue of the notes—the letter is really too interesting to let go by so briefly. . . . **William Dennett** is a Project Engineer at the Portsmouth Naval Shipyard where his duties include technical supervision of hydrodynamics and launching of submarines. Bill and Irene (Daigle) have one child and live in Kittery, Maine. (For those of you who may not know it, the Portsmouth, N.H., Naval Shipyard is in Kittery, Maine). . . . **H. Stuart Dodge** is a reliability and physics of failure engineer with G. E. in Valley Forge, Pa. He and Anne number four offspring: Tommy, 9, Betsy, 7, Beverly, 4 and Alison, 2½. . . . **George Economos** was elected to Fellow status in the American Ceramic Society. George received his Sc.D. in 1951, was with the Institute's Laboratory for Insulation Research, and is now with Allen Bradley Company in Milwaukee. . . . **Paul Grady** joined the Marketing Department of Union Carbide's Chemical Division. Prior to this he was with R. T. Vanderbilt Company and Socony Mobil, also in marketing and manufacturing functions. The Gradys (four children) live in Westport, Conn. . . . After ten years abroad, **Patrick Griffin** and his wife Monica bought a house on Bainbridge Island where they have a magnificent view of Seattle. Pat is with the Nuclear Power Division of the Naval Shipyard in Bremerton, Wash. They have two daughters, ages 4 and 2. . . . And noted by a publication in the Applied Physics Letter of the American Institute of Physics, Dr. **Ernest Huber** is with the Lincoln Laboratory, M.I.T., and lives in Waban, Mass. . . . Another nice long letter is the annual **Jex** Christmas Chronicle, which **Henry** so kindly sends us. It is hard to select only one or two items, but: all of their children got started in Montessori School and Henry was elected to the Board of Directors of the Los Angeles area Montessori Schools, Inc. (this governs 4 schools). Even his wife Betsy helped as Chairlady of the health and safety committee (Betsy is a registered nurse). The Jexes have been a real busy crew, like camping (Death Valley for four days), and spending their vacation in a cabin at Fallen Leaf Lake near Lake Tahoe. Henry went in big for stereo and prides himself in his near perfect reproduction of a 120 decibel cathedral organ. He is still with Systems Technology, Inc. and has been working on a project dealing with car-driver dynamics. . . . **Harry Johnson** is an associate professor of Chemistry at the University of California at Riverside. Anne, 4, and Jill, 2, keep Harry and Ann (Dahlgren) busy. . . . **Robert** and Loetta **Lewis** are living in the Boston area; Bob is Assistant Manager of Armed Services Activities. This is the Chaplain endorsing agency of the First Church of Christ Scientist in Boston. Bob has an M-Day Air Force Chaplain's reserve assignment (captain), at L. G. Hanscom Field in Bedford, Mass., where there are a lot of "other M.I.T. types around." . . . The **H. Kenneth McCoys** have settled in the San Francisco area where they had their eighth child. Their itinerary can be followed by the birth certificates: Caryn, 17½, and Laureen, 16, were born in Cambridge; Roxanne is 14½ and a Texan; Melanie, Craig, Kyla and Karstyn (13, 11½, 10 and 8½) were born in Seattle; and now Taria, 2½, born in Calif. Ken is Northern California Manager of Wieler & Company, Electronic Manufacturers' Reps. . . .

I must pass on this report of a new and Honorary class member: if you were at the reunion on Friday night or passed through the bar on Saturday, you may remember the very amiable and able pianist. That was Judge Kenrick A. Sparrow who asked to affiliate with us. The Judge is from South Orleans, Mass., and was "marooned" at Chatham Bars Inn when the weather turned stormy. When we sorted out the questionnaires, etc., we found that he had turned one in. Welcome aboard, Judge, but I should add that any of our class that gets caught speeding on the Cape can get no help—he is Judge of Probate Court. . . . Let's see what else is in the mailbag. **Ivan Chasalow** and Carol (Silver) have a four to two boy/girl ratio varying in ages from 11 down to one, and they live in Whippany, N.J. . . . Dr. **Mark Nelkin** received an award from the American Nuclear Society for outstanding contributions to reactor physics (he was cited particularly for his theoretical work on neutron thermalization and thermal spectra). . . . **Bill Krivsky** left his post as Vice-president of Brush Beryllium a year ago to become Vice-president of Continental Copper and Steel Industries, Inc. He and Ann (Harlow) have 4 children, the oldest is a boy, 12; the others are young ladies. . . . Col. **Robert Rawls,** now Col. Rawls, USA-Retired, is Manager of the Fort Lauderdale Executive Airport. Bob and Betty have two grown children, Caroleigh (22) and Susan (19). Bob is a camera and travel enthusiast and, as you might expect, a flying enthusiast. . . . **George Thompson** notes, from Rochester, N.Y., that after several years of unemployment he is now an assistant professor at Rochester Institute of Technology. Since he added that he received an M.S. in Electrical Engineering in June 1965, I assume, and certainly hope, that his so-called unemployment was due to being a student. . . . **Thomas Weil** was recently granted a patent on a novel electronic circuit for increased uniformity and effectiveness of noise signals used in jamming. Tom is manager of the radar transmitter section of Raytheon's Surface Radar and Navigation operation in Wayland, Mass. Tom has seven other patents issued as well as three pending. . . . **Robert Wedan** has come back to Boston to serve as Chief of the systems branch in the guidance laboratory at the NASA Electronics Center in Cambridge. Last I heard he was living in Wellesley, Mass., with his wife and 3, but I recently received two address changes that are difficult to figure out. If I get a response, I'll let you know. Meanwhile, welcome back to Boston, Bob, I think. . . . A few of you who also wrote to me take note. I haven't forgotten or ignored you. I'm running out of space but will acknowledge your most welcome letters in a future issue. And to all of you from all of us, wishes for a joyous holiday season —**Howard L. Levingston,** Secretary, 358 Emerson Road, Lexington, Mass.; Assistant Secretaries: **Marshal Alper,** 1130 Coronet Avenue, Pasadena, Calif.; **Walter O. Davis,** 346 Forest Avenue, Brockton, Mass.; **Paul Smith,** 11 Old Farm Road, N. Caldwell, N.J.

Thomas A. Weil, '51

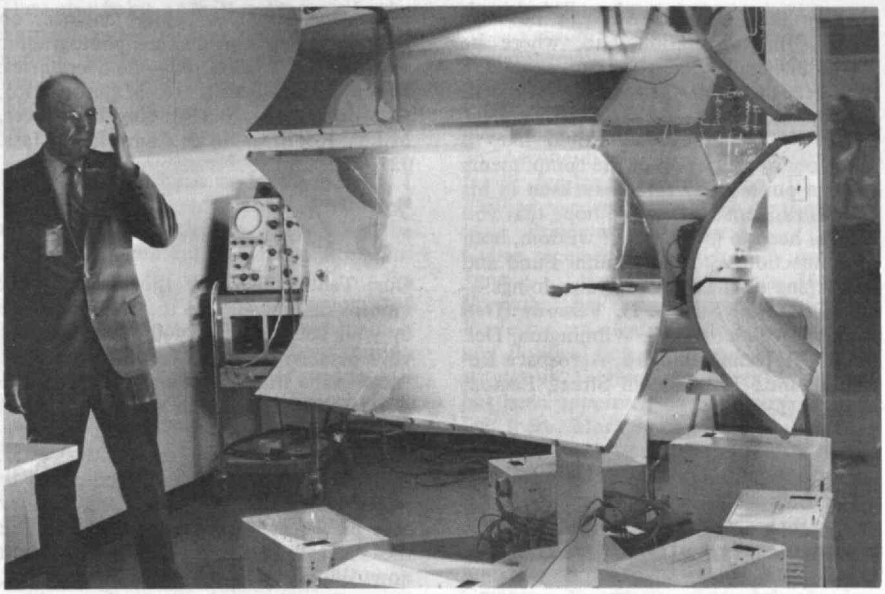
'52

Second column of the season, and already more material would be much appreciated. Please write. **J. Edward Schwartz** was married to Barbara Latham in September, and they are living in Birmingham, Mich. . . . **Arnold A. Kramer** has completed his round-the-world trip via Italy, India, Thailand, Hong Kong, Japan, and Hawaii; and he confirms that the world is definitely round. From Matunga, Bombay India, comes a letter from Prof. **R. D. Godbole** telling us that he has taken charge as Principal of Ramnarain Rula College, where he is also Professor of Physics. . . . **Edson G. Case** has been appointed Deputy Director of the Atomic Energy Commission's Division of Reactor Licensing in Washington, D.C. . . . **Martin Sack** writes in that he has started (Sept.) as an Assistant Program Manager at Bunker Ramo in Silver Spring, Md. . . . Dr. **Alina S. Szczecniak,** Head of General Foods Texture Technology Center, spoke to the National Confectioneers Association on Texture Measurements. **Phillip H. Smith** has been appointed Vice-president of Copperweld Steel Company, in Development and Procedures. . . . An interesting item concerning **Louis Sutro** at M.I.T.'s Instrumentation Lab who reported in Electronic Design, is that techniques being developed for the Voyager missions are part of a larger effort to develop a robot capable of carrying out preset programs and of self-programing within certain bounds. . . . Dr. **George S. Reichenback** has become Assistant Director of Abrasive Research and Development at Norton Company, Worcester, Mass. . . . And Dr. **Burton Wendroff** has been named Associate Professor of Mathematics at the University of Denver (Colorado). That's about it for this month.

Have you sent in your Reunion reservation form yet??—**Dana M. Ferguson,** Secretary, Box 233, Acton, Mass.

'54

Although this is being written at the height of the beautiful New England fall foliage season, merry Christmas and a happy New Year to you all. The holiday season is always a good time to review old acquaintances either in person or by card and letter, so please pass along letters or information which may be of interest to this column. **Dean Jacoby** (XV) reports that he visited with the **Coley Bresees** (XV) last Spring while in California on M.I.T. business. Coley has just finished six years of law school (at night) and taken his California bar exam. He hopes to get his masters degree in law at Stanford in three more years and then go into private practice or teaching. . . . Dr. **Thomas N. Chase** (XV) has begun work at the National Institute of Health on cerebral catecholamine metabolism. Dr. Chase was chief resident in neurology at the Massachusetts General Hospital and completed three busy years at Harvard Medical School. . . . **Joseph P. Dankese** (X) is presently a project manager at Amicon Corporation in Cambridge, Mass. . . . **David W. Dennen** (VII) has received a Ph.D. in microbiology from the University of Indiana and is employed by the Ely Lilly Greenfield Laboratories in microbiological research. Dave, a major in the Indiana National Guard, recently received a commendation from the Governor for meritorious service. He has served three years of active military service in the Chemical Corps and as a paratrooper. . . . Your Secretary and his former Tech roommate, **Jack Duffin** (XVI), finally succeeded in getting their two families together during the summer while Jack was back East on vacation. Jack has just joined the Vernon Industrial Division of the Bechtel Corporation. Jack and Terry and their three children reside in Fullerton, Calif. . . . I received a newsy letter from **Bob Evans** (XIV) who appreciates that this column needs inputs if anyone does. Bob and Lois and children Tommy, Janet, Karen and Robby are enjoying the beauty and hospitality of Japan while Bob does research at Keio University. The tables were turned on the tourists recently during a trip to an unspoiled village, when the Evans brood found themselves the object of interest since, as Bob relates, "four children is not typical in Japan and of course Tommy and his red hair stand out in a black haired country." . . . Dr. **Semour Grossman** (VII) is now in practice as a gastroenterologist and internist in the Permanent Medical Group at the Kaiser Foundation Hospital in Oakland, Calif. After four years at NYU School of Medicine, Dr. Grossman took his internship and residency in Cleveland followed by two years as a research fellow at the New York Hospital, Cornell Medical Center, and two years of practice in White Plains, N.Y. He and Bonnie, and children Michael and Deborah reside in Berkeley Calif. . . . While being indoctrinated on Air Force Systems



Six xenon flashtubes designed by John H. Goncz, '54, are used in this marine-warning beacon system built for the U.S. Coast Guard and installed in the Chesapeake Light Station near Cape Henry, Va. Harold E. Edgerton, '27, founder of the firm of Edgerton, Germeshausen, and Grier, Inc., which developed the flashtubes and beacon system, stands at the left.

Engineering Management Procedures, I came across Captain **Fred Hofmann** (XVI) in a filmed briefing for industry explaining the Air Force 375 series documents and procedures. Fritz was anchorman on a panel of officers and civilians who answered questions from industry. . . . **Paul D. Spreiregen** (IVA) has been appointed as first Program Director of Architecture and Design at the National Council of the Arts. For the last four years he has been Director of Urban Design Programs at the American Institute of Architects in Washington, D.C. During the summer Paul participated in the fourth Delos Symposium aboard ship in the Aegean Sea, Greece. Already the author of numerous published articles, he is currently editing the collected essays of two men in the field of urban design and planning, Hans Blumenfeld and Elbert Peets. His book on Urban Design published November '65 has had three printings and is now going to be published in Japanese. . . . **Bob Warshawer** (XV) has returned to Massachusetts after a four-month field assignment in San Bernardino, Calif., as engineering liaison representative for the minuteman ground electronics system. Bob is Manager of the Project Engineering Department in the Minuteman Program Office at Sylvania in Waltham.—**E. David Howes, Jr.,** Acting Secretary, Box 66, Carlisle, Mass.

'55

Since your male correspondent finally broke down and became a mortgage owner last April, he has had an opportunity to become more civilized and socialize with some of his classmates in a standard suburban fashion. Fortunately, around the corner from his woodsy retreat in Lincoln is another woodsy retreat housing Ann and **John Brown,** and their daughter Ginny, who have been trying with some degree of success to teach us how to play bridge. Jack has recently transferred from the technical staff of Bolt, Beranek and Newman to a senior position with a new division of General Electric named MEDINET (Medical Information Network). The division, which was formed in March of 1966, will provide time computer based information services to the national hospital and medical community. The parent plant is located in Watertown—the first system to be installed in the Boston area. . . . Remaining in the medical vein, we received a very nice letter over the summer from Naomi and **Walter Rubin.** They had just welcomed their fourth child, Michael. The other three are Stuart 5, Elizabeth 4, and Debra 2½. Walter is assistant professor of medicine at the Cornell University Medical College in New York City. . . . Wedding bells are still ringing in our midst. **Joseph Saliba** was married to Deborah Glidden of Englewood, N.J., in September. Here is a real live case of someone who married "the girl around the corner." Joe is with IBM in New York City. . . . **Jerrold Zindler** was married to Linda Logowitz of Providence, R.I., also in September. Jerry recently joined the technical staff of Instrumentation Laboratory. The company is located in Watertown and specializes in devices for the medical field. The couple is living in Cambridge. . . . **Jim Storey** has taken a position as general manager with the Codex Company in Watertown. Codex manufactures instrumentation for error correction of teletype signals. . . . **Valdemar Skov** has recently joined the engineering staff of Aerospace Research, Inc., in Brighton and is involved in the design of instrumentation for precise world-wide time synchronization. He lives in Wayland and is currently expecting child No. 3. . . . Although we haven't received official word, we heard

rumors that **Douglas Sullivan** has left M.I.T. Instrumentation Lab, where he has been since graduation, to assume a senior position at Transitron. We will convey the details as soon as we hear more. . . . Your editors would like to voice our appreciation of the compliments thrown our way by **Glenn Jackson** in his Class President's letter. We hope that you all will heed to his words of wisdom, both in connection with the Alumni Fund and in keeping us informed of your doings.—Co-secretaries: **Mrs. J. H. Venarde (Dell Lanier)**, 16 South Trail, Wilmington, Del. 19803; **L. Dennis Shapiro,** Aerospace Research, Inc., 130 Lincoln Street, Boston, Mass. 02135

'56

Nelo Sekler writes that **Clemente Chirinos** was killed in an automobile accident in Venezuela on September 17. At the time of death, Clemente was Secretary to the President of the Corporation de Guayana, a state owned development company. . . . **Barry Brown** has recently received three Clio awards at the American TV Commercial Festival for his outstanding use of photography in commercials. Barry is an independent film maker who works with a number of agencies, including Doyle, Dane, Bernbach. . . . In May **Ronald Clark** became assistant Vice-president of New York Securities Company, a brokerage firm. . . . **George Luthringer** has become a minister in the Episcopal Church and is serving in a parish in Cincinnati. George completed his studies at the Church Divinity School of the Pacific, Berkeley, Calif., in June. . . . The July 18, 1966 *Chemical & Engineering News* carried a feature article on Dr. **Wing Tsang** and his work at the National Bureau of Standards on the kinetics of certain chemical compounds as determined by shock tube analysis. . . . In answer to the questionnaire: **Bob Alter** was married in 1964, and he and Barbara have a year-old son, Jay. Bob works in his father's firm, Harry Alter Company, in Chicago and also attends the University of Chicago Business School. Bob omitted the fact that the military has needed his presence in almost every crisis since graduation which has resulted in a lot of uniform cleaning bills. After one such interruption, Bob squeezed in a trip around the world. . . . **Sam Friedman** received his law degree from Columbia in 1965. Now he is with the firm of Lord, Day & Lord in New York and spends his vacation traveling to places like Europe and Canada. . . . Dr. **Bob Kaiser** was changing jobs at reunion time and now does colloidal chemical research for Avco Corporation. In a between-job vacation he visited Portugal, Spain and France and stopped to see **Gilbert Weil** and family in Paris. . . . **Carl Slenk** wed Barbara Beckmann in 1960, and they have two children, a daughter and a son. Carl's wife is taking graduate courses in speech pathology. Carl received his masters from Harvard Business School and is now marketing manager of ceramic fibers for Carborundum. . . . **Bill Tasi** was married on February 5, 1966, to Mary Lou Cackowski and spent his honeymoon in Europe. Bill is a project engineer on military electro-mechanical-photographic systems for CBS Labs.—Co-Secretaries: **Bruce B. Bredehoft,** 16 Millbrook Rd. Westwood, Mass. 02090; **Guy T. Spencer,** M.I.T., Room E19-439, Cambridge, Mass. 02139

'57

Our Tenth Reunion, though over six months off, is well into the planning stage by your committee. If you haven't started your personal planning for this event then "now is the time." Without benefit of the usual questionnaire one would guess that the average classmate is married with several children—meaning baby sitters et al. for the Jug End weekend. So remember to be kind to those mother-in-laws, as they may play a significant and unsung role in the success of the reunion. Book them now! While on the subject of reservations, if you haven't sent in yours along with a check for class dues, then better attend to it right now. We'll be looking for you in June, so don't be left out because you neglected to mail a post card. **Stanley Cortell** is now a medical doctor: "I shall be completing a most successful tour in the Medical Corps, stationed at Walter Reed Army Institute of Research in Washington, D.C., this July. At that time I shall be a senior resident at the New England Medical Center in Boston. This will complete my training in internal medicine." . . . **Bruce Blanchard** reports that he has three children and went back to Tech for a masters degree in water resources systems analysis in the Civil Engineering department in 1964. At present he is a project planning engineer in charge of the investigation program for the Central Arizona Project with the Bureau of Reclamation in Phoenix. He still plays lacrosse with the Phoenix Lacrosse Club and is active in the National Guard. . . . From **Antony Hambouris** we received the following letter: "For the past 4½ years I have been stationed in Manila, Philippines, as Southeast Asia Manager for Worthington Corporation, covering the Philippines, Hong Kong, Vietnam, Cambodia, Indonesia, Malaysia and Thailand. In June this year we are being transferred to Buenos Aires or Sao Paulo (not sure which yet) as Regional Manager for South America for U.S. products. This will be an exciting and challenging new job and a big step for me in the management of our international business. Ever since 1959 I have been traveling overseas, first in Venezuela and then in Puerto Rico covering the Caribbean, now in Manila and shortly in South America. For this reason I have been unable to attend any meetings or reunions, or participate in any sort of activity. I hope that one of these days I'll be back in the U.S. and then look forward to see you all and tell you about many interesting and thrilling adventures." . . . **Dick Smallwood**'s note reads as follows: "I am currently an assistant professor of electrical engineering and engineering-economic systems at Stanford University. My wife, Jeri, our two children, and I are enjoying the outdoor living in Palo Alto, Calif., as well as the advantages of living in a university community. I have been working mainly in man-machine systems over the last few years and foresee a great future for this relatively new area." . . . **Dick Schwaegler** informed me that he is presently studying at the University of Washington towards Ph.D. in Engineering Mechanics under an N.S.F. Science Faculty Fellowship. He hopes to return to the Seattle University faculty when he is finished. His growing family now numbers five. . . . In response to our questionnaire on the reunion **Donald Norman** replied as follows: "The reason we cannot come to the reunion and cannot help is that we are moving. We leave this summer to the glories of La Jolla, Calif., year-round resort. I am to be an associate professor in the Psychology Department at the new campus of the University of California which is being established in La Jolla (officially known as the University of California, San Diego). At the moment there are few students. The first undergraduates will graduate in 1969. By 1995 the University will be one of California's major campuses, with a total planned enrollment of 27,500 students. We leave Harvard in mid-July for Europe, one week at the International Congress on Psychology in Moscow, some time in Italy and Denmark, Amsterdam and Budapest. Then a trip across the United States to La Jolla. If this sounds busy to you, you are right. And through all of this we will have a two-year-old daughter. (It is about time she learned some Hungarian.) So this is why our minds falter at the thought of yet another major trip to the East in the summer of 1967." . . . **Vic Klemas** sent me the following letter recently: "After working on Satellite Communication Systems at GE—Valley Forge for four years, I received a GE stipend to study for my Ph.D. in Europe for three years. Just before leaving for Europe I married a Penn. girl and we have two boys now. My research in Germany was in the area of optical communications—laser technology. Upon my return from Europe I accepted the position of Manager, Sensor Technology at the Missile and Space Division of GE at Valley Forge. We settled down in Devon, Pa., where we bought a home." . . . With great embarrassment I would like to acknowledge, at this very late date, a letter which I received from **Andy Blackman** in January of this year. Andy sent me a large clipping from the *New York Times* of Monday, January 3, that describes with text and pictures the interior decoration of the apartment that Andy and his wife Jeannemarie have in Greenwich Village. Andy, an architect, opened his own office recently and is now trying to keep his hand in interior architecture as well as the usual exterior brand. His commissions have included a number of apartment and commercial interiors and buildings. Andy's wife was selected as one of the top fashion designers in junior sportswear in 1965 shortly before their baby was born. . . . That's all from here. I would appreciate receiving greetings cards with long letters enclosed from all those who can spare the airmail postage to England. My sincere best wishes for the new year.—**Frederick L. More-**

field, Secretary, 18 Whaddon House, William Mews, Lowndes Square, London, S.W.1. England.

'58

In the holiday mailbag is a letter from **Bill Duffy,** whom we last saw in the reunion. Bill writes, "I changed companies since the reunion and am now working with H.P. Hood. After a year on their training program, I was assigned to a cottage cheese plant in Maine. This lasted eleven months, and then I was promoted to the position of assistant superintendent of the Agawam Plant, employing 100 people. The moving has been a little hard on the family, but we are all getting used to it. We still have only the one boy who is now 4. I have hopes of going back to school in the evening division as the company assists on the tuition and Uncle Sam helps out on the taxes. It has been about three years now since the reunion and I've lost touch with some of the class pretty much. One item of news is that we attended **Glenn Bennet's** wedding last spring in Wellesley. Glenn is working in California, and he and his wife are now living in Menlo Park, Calif. We also ran into **Bob Cooper** and his wife Jean. They are living in Sudbury, Mass., and Bob is still with Avco. **Rod Swift,** another track man, also showed up. He and his wife just returned to the Boston area after having been in Connecticut. Ellie and I are living in Westfield, Mass., now and would like to hear from anyone when they are near."

Some new posts and promotions have occurred recently. In Los Angeles the Planning Research Corporation named **John O'Brien** a senior associate in the systems research department. John received his M.S. in 1964 at UCLA and is living in Sherman Oaks, Calif. . . . **Robert Slott** has been appointed a research supervisor in the physical chemistry department of Shell Development Company's Emeryville, Calif., research center. . . . **Roy Thorpe** has been elected Vice-president of Falcon Alarm Company in Springfield, N.J. He will supervise sales and marketing for the safety signal systems and allied warning-alert devices marketed nationally by Falcon. Roy resides in West New York, N.J.—just in case anyone wants to get some ideas on how to be a v.p. . . . Or, you can talk to **Mike Falk,** who is executive Vice-president of Hanover Mills in Yancyville, N.C. He writes, "have recently moved to Greensboro, N.C. Ann and I now have three children: Harry 5, Sheryl 3½, and Elizabeth 20 months." . . . And, to add an extra Holiday bonus, we received news from some classmates whom we haven't heard from. A note from **Alfred Neuburger** told us of his marriage last Spring to Evelyn Ferguson of Rockland, Mass. He received his S.M. at M.I.T. last January and is living in Brookline. . . . **Paul Skala** is now manager of manufacturing services at Erie Technological Products Inc. in Erie, Pa. In this post he is responsible for purchasing, material control, and the computer center operations among the primary functions. They have two children, Holly Elizabeth 5½ and Peter Michael 1½. They also boast a small menagerie in the form of a dog named Lucky and a cat named, would you believe?—Cat. Paul would be delighted to hear from any '58ers when they are in the area or via the *Review*.

As you see from the new address below, I am now back in Massachusetts. I have been transferred to the Texas Instruments plant in Attleboro where I will be involved in a marketing and product planning program for some new controls we are developing. We had a fair amount of news from Michigan while I was there—hope the Mid-west news will keep coming in now that I'm back East. Be sure to call me anytime you come to the Boston area. Until then, a very old-fashioned New England Christmas to you and your family this year.—**Michael E. Brose,** Secretary, 1171 North Street, Walpole, Mass.; **Antonia D. Schuman,** Western Associate, 22400 Napa Street. Canoga Park, Calif.

John O'Brien, '58

'60

We're sometimes a little late in reporting classmates' activities, but better late than never I suppose. For example, **Jack Tomlinson** has a daughter born October, 1964; he finished with the army last November and is now working at Bell Labs in Murray Hill, N.J. . . . **Peter Magnante** writes, "My family includes my wife, Jean, and two sons, David and Stephen. Since 1960 I have been doing graduate work at N.Y.U. and have earned a master's in mathematics, and expect a Ph.D. in physics this year. We hope to relocate into the Boston area late this year. . . . **Carl Pihl** has moved to Dallas, Texas, for a new job—Senior Technologist for the Dr. Pepper Company there. . . . Captain **Robert Gold** is in Arizona and is one of four Air Force physicians in pilot training. . . . **Norm Bednarcyk** writes, "Second child born 11/8/65—now have two girls. Currently working on Ph.D. in Food Science at Rutgers University, New Brunswick. Expect to finish in January 1967." . . . **Richard Smith** left the army last July after two "unmilitary years at an ordnance procurement office in Pasadena, Calif." He has begun to practice law with the Dallas firm of Wynne, Jaffe & Tinsley. . . . **Tom Thiele** was married in March 1965, after completing a two-year stint in the Navy on the USS Bennington as Assistant Electronics Officer. He is now employed as group leader of an electronic development group in the Research Division of Allis-Chalmers in Milwaukee. He says, "I'm on the look out for good EE types interested in challenging opportunities in electronic development work in a not-too-electronically-oriented company." If anyone is interested, Tom's address in Milwaukee is 333 North 91 Street. . . . **Vernon Yoshioka** was married in September 1965 to Shinobu Bender; they have three children—Charles, Carol, and Linda Bender, ages 12, 10 and 9. Vernon is a Senior Aerodynamics Engineer at Ryan Aeronautical Company; he and his family are living in San Diego. . . . **Tony Phillips** received a Ph.D. in mathematics from Princeton last June. . . . **Roger Cohen** received a Ph.D. from Rutgers in June. . . . Some appointments: **Howard Rosenthal** has been appointed Assistant Professor of Industrial Administration and Political Science at the Carnegie Institute of Technology; **Mark Weissman** has been appointed an instructor of English there. Mark is currently a candidate for the Ph.D. at Rutgers. . . . **George Lewicki** received a Ph.D. in electrical engineering from Caltech this summer. . . . **Tom Pyle** is at the Harvard Business School. This past June he was named a finalist (one of eight) in the Scott Paper Company Foundation Award for leadership at the Business School. Before enrolling at Harvard, Tom was a television account executive with Young & Rubicam in New York. . . . I have a note from **John Saul's** mother (I think, at any rate from some member of his family). "John is in Africa—Kenya, Uganda, Somalia, etc. Please continue to send his mail to 200 East 66th Street in New York. He has been away for several years, and we forward things to him from time to time." . . . **Gerry Hurst** has moved to Philadelphia; he'll be working for General Electric there, but, I am sure, will carry on the staggering task of leading this splendid class to further (!) glory.

Some extremely incidental class news: this summer I discovered, hidden away in an attic in northern Vermont, a rare prize. I digress—do you remember the class of 1960's marvelously successful Junior Prom in 1958? ? Sure you do! And of course you will recall that at that time we gave away valuable favors—one for each couple. It was a very long and terribly sad story, but the favors were all to have been charming little grey stuffed doggies wearing red berets—grey dachshunds, to be exact. Alas, your Junior Prom Committee was overly diligent and sold more tickets than we had had favors made. What to do? After some scurrying around which included a telephone call to the Tokyo Rose Company (I kid you not), we got 200 extra doggies. Just our luck, the extras had to be poodles, not dachshunds, and some of them had black or green trim instead of red. Well, to make a long story short, we over-ordered on the over-order and had a large bag of doggies left over after the dance—all poodles. You guessed it—I've rediscovered the lost poodles. The Class of 1960 now has about 50 little stuffed animals to add to its growing collection of memorabilia: Senior Week beer mugs, class playing cards, and who knows what the future will bring? ? ? Back to news of classmates now that that very important bit of business has been transacted. Let me finish up with some newspaper clippings which I will sort of quote to give you the gist of what they're all about. NASA has granted **Robert Stengel** "some $25,000 to develop a new

method of measuring wind velocities at various altitudes . . . [he] will continue testing of a 'lifting wind sensor' which he hopes will prove more effective than balloons presently used to study wind speed and direction before rocket launchings." Bob is now a graduate student at Princeton, working in the aerospace and mechanical engineering departments; he was in the Air Force for three years, stationed at Wallops Station, Va. Lt. **Howard Meadors** was awarded the Army Commendation Medal and a certificate of appreciation at the Army Satellite Communications Agency in June. He was "honored for his work in highly delicate and theoretical areas of space communications before leaving the Army. He had been with the agency since June 1964 when he completed the signal officers basic course at Ft. Gordon . . . He has taken a position with Bell Laboratories, Holmdel." Howard and his wife Phyllis live in Eatontown, Ill. . . . And a newspaper in Cincinnati reports, "An Army officer has come to the aid of the Navy! First Lt. **James T. Cobb, Jr.** . . . has been assigned to aid the research and development work at the Naval Ordnance Test Station's Earth and Planetary Sciences Division, Code 50, at China Lake, Calif. . . . Lt. Cobb . . . is the first army officer in the Naval station's history to be given a regular assignment to its scientific labors. Lt. Cobb will be working with the division's civilian scientists in its weather modification studies. He and his wife, Lana Jo, have taken residence near the base." That's it for this time. Keep those cards and letters coming.—**Linda G. Sprague,** Secretary, 345 Brookline Street, Cambridge, Mass. 02139

'61

In the sneaky manner common to all souls doomed to write a column of class notes every month I have been holding back on some of the tales of classmates gleaned from the reunion. This way I can stretch out one column's worth of news into two. So here is what's left. **Les Bromwell** has been toiling as a "grad student at M.I.T. since 1961, except for about 9 months working in Venezuela. I graduated with an Sc.D. in June and have accepted an appointment as assistant professor in the Department of Civil Engineering. Joan (my wife), whose good disposition has somehow survived 9 years of 'school' is glad that it is finally over and that I am at last going to start earning a living." Les lists three children: Leslie Jr. (8), David (7) and Robert (4). . . . **Earl Van Horn** just finished his doctorate at M.I.T. also, his in EE. Now he starts working in Phoenix for General Electric. . . . **Haim Alcalay** is in more or less the same boat; finishing up his Ph.D. in course X, he went to Union Carbide plastics division last summer. . . . **Mike Feder** is still in graduate school (University of Rhode Island) going for a doctorate in Electrical Engineering. He has moved around a bit since graduation. "After graduation from M.I.T. I did graduate work towards a Masters degree in EE at URI. In February of 1963 I began a 2½ year tour of duty at Patric AFB in Cocoa Beach, Fla. My work took me to the Cape where I worked with the guidance system group on the Gemini Project. While in the Air Force I got my private flying license in affiliation with the Aero Club on base. Also I did a lot of water-skiing and even tried my chances in a tournament and water show." Mike and wife, June, have two kids, Gary Scott age 3 and Judith Lynn. . . . **Paul Robertson** has also had a hand in the Gemini program. Between graduation and late 1963 Paul moved around, working for South New England Tel. and Tel. designing installations, taking a semester at NYU and serving a brief hitch with the Army. But "in December 1963 I moved to Baltimore to join the Martin Company Information Systems Department. Shortly thereafter I met my wife, Mary Catherine Scally of Baltimore. We were married on September 12, 1964. At Martin Company I was assigned to the Gemini Launch Vehicle Program and worked in Instrument System and Design and Testing. Now I coordinate the computer-processing of flight data in a data engineering group." Paul manages to find time on the side to take classes at Drexel Institute toward an MSEE and to be a member of the Baltimore Civic Symphony, the Baltimore Park Band number two and the Baltimore Area M.I.T. Alumni Club. Wheew! . . . **David Latham** is also all wrapped up in outer space. He works for the Smithsonian Astrophysical Observatory and has "been studying astronomy at Harvard part-time since '61. One of these days I'll write a thesis," he says. Three boys keep him and wife Ginger busy: Andrew (age 8), James (4) and Peter (2). . . . **Richard Kenefick** wrote: "Have been employed at Grumman Aircraft Engineering Corporation since graduation, recently being appointed section chief of Structural Sciences for flight test with responsibility for all structural, flutter, vibration and carrier suitability trials of GAEC aircraft. My wife Geraldine, our two boys Richard (5) and Steven (2½) and I are living in a typical Long Island Suburbia (Sayville) and are attempting to find a suitable home to buy. Outside of several two or three-month road trips (Florida-Maryland, etc.) and short vacations we seem to spend enough time at home to fight the lawn's crabgrass to a tie. Our oldest boy has been attending nursery school and will be entering grade school this fall." . . . **Garry Gustafson** has also found a home in the aerospace complex working for Pratt and Whitney Aircraft and living in East Hartford. . . . **Richard Brown** "went to work for Pratt and Whitney upon graduation. I spent three years with them in East Hartford and Montreal (on temporary assignment). Then I returned to M.I.T. in July 1964 as Industrial Liaison Officer after getting married to Elizabeth in June 1964." . . . **Stan Kulpa** also spent a short time in the space business. After two years at Northeastern getting an M.S. in physics he worked for Space Sciences Incorporated during 1963 and 1964. Since 1964 he has been at Brandeis finishing up on a Doctorate in physics. . . . **Jerry Grossman** finished up his internship and now is starting on a residency at Mass. General Hospital here in Boston. . . . **Harvey Eysman,** as we mentioned before, is a trial lawyer in NYC. He is also a member of the Atomic Energy Committee of the New York State Bar capitalizing on his Course VIII background. He is representative of the First Judicial District of New York State of the Young Lawyers Section of the State Bar Association. . . . **Mike Harris** married his wife Alice in 1963, the same year he started working for Raytheon on microwave ferrite devices. In 1963 they had a son Jeffrey and expected an addition in September. . . . **Bruce Bardes** is an assistant professor at Clemson University in Clemson S.C. He is also working toward advanced diplomas from M.I.T. but says that he expects to be finished at infinity. . . . I can't resist putting a little about the Braun family into the column. Helen produced a healthy daughter last August. After about a week of bickering we decided to call her Rebecca Tracy Braun. We struggle to keep her on the 4-hour schedule, but she has a mind of her own and we feel like pawns. It seems so new and exciting to us, but its old hat to most of you old fathers. Merry Christmas and happy New Year and happy Hanukkah to you all.—**Andrew Braun,** 1038 Beacon Street, Brookline, Mass. 02146

'62

Barry Roach, who works for McKinsey & Company in San Francisco, told me that **Paul Olmstead** is married, that his wife is expecting, and that Paul is attending Harvard Business School. Barry has been doing a lot of traveling to Los Angeles and New York on management consulting assignments. . . . **Elliott Bayly** writes that after working for Honeywell for a year and a half in Minneapolis he began attending the University of Minnesota graduate school in electrical engineering. After a year he became interested in neurophysiology and has been working on a modeling problem in the crayfish nervous system since then. He is working towards his Ph.D. but is presently leaving for a year's work in a physiology lab in Pisa, Italy. Elliott says that **Larry Turner,** who received his Engineering degree from M.I.T. last year, is now doing research work for Honeywell in Minneapolis. . . . **Henry McCarl** co-authored an article entitled "Change—a Permanent Dimension in Cement" which appeared in the February, 1966, issue of *Rock Products.* As a result of his work in this area at Pennsylvania State University, he acted as a member of a panel discussing "The Long Range Outlook for the Cement Industry" at the May meeting of the Portland Cement Association. He also appeared as a witness before the current hearings of the Federal Trade Commission on "Vertical Integration in the Cement Industry." . . . **Gerald C. Pomraning** received the 1963 Mark Mills Award from the American Nuclear Society. He is at present a staff member of the theoretical physics department of General Atomic, where he has been engaged in neutron transport theory. He has published in scientific journals several papers

on basic reactor theory and variational methods. . . . **Jeff Steinfeld** has been on an N.S.F. post-doctorate fellowship at the University of Sheffield, England, and has been attending meetings of the M.I.T. clubs of London and Paris. Samuel Groves, '34, former president of the Alumni Association, spoke at a recent London meeting. Jeff reports that **Dick Stein** has finished his Ph.D. in physiology at Oxford and has visited several times with **Juri Toomre,** who is in mathematics at Cambridge. By now Jeff should be back at the M.I.T. Chemistry Department. . . . **John** and Vernie **Ohlson** announced the birth of their second child, Julie Elizabeth, last May. John is working towards his Ph.D. in electrical engineering at Stanford University. . . . **Fran Berlandi** received his Ph.D. in analytical-nuclear chemistry last spring at the University of Michigan. He is now on active duty with the Navy in San Francisco as a Lt. (jg) and is doing work that involves nuclear research at the Naval Radiological Defense Lab. . . . **Charles Gerheim** received his Ph.D. in chemical engineering at Purdue University last spring and is now working as a research engineer at Shell Oil Company's Houston research laboratory. . . . **Ronald Williams** has been working for Skidmore, Owings and Merrill since graduation and is now working on the design of the John Hancock Center in Chicago. . . . Dr. **Peter Shrier** graduated last May from the University of Vermont College of Medicine and is now interning at Jefferson Medical College Hospital in Philadelphia, Pa. . . . **Richard Sutton** received his M.D. last spring from the University of Pennsylvania School of Medicine and is now interning at Detroit General Hospital. He married the former Sarah Banks, who received her A.B. from Wellesley in 1964 and her M.A. from Bryn Mawr in 1966.

Jerry Winston is at the Australian National University in Canberra working towards his Ph.D. He is also doing some teaching and tutoring. . . . **Tommy Alexander** is working as a systems engineer for Continental Airlines at their Los Angeles maintenance base. . . . **William Rice** is now living in Lexington, Mass., and is working as a specialist in data processing for Lybrand, Ross Brothers and Montgomery, a national accounting and auditing firm. His wife had a daughter, Kristie, in 1964. . . . **Gerson Carr** received the M.D. degree from the University of Louisville Medical School last June and is interning at the University of Illinois Research and Educational Hospital in Chicago. . . . **Robert Mayers** worked for the Alliance for Progress in Central and South America, designing low-cost housing. He was then in charge of a large architectural office in East Pakistan and is now living in New York and working towards his architectural license. . . . **Thomas Sheahen** completed his doctoral degree thesis last March and received his Ph.D. last June. His thesis title was "Low Temperature Specific Heat of Gallium." He is now working for Bell Telephone Laboratories on re-entry physics in Whippany, N.J. **Ed** and Joyce **Linde** announced the birth of their second child, Karen Sue, last May. Ed is happily employed for Cabot, Cabot and Forbes in Boston and has recently acquired a new house. . . . **Will Taylor,** our class treasurer, is working for IBM-Federal Systems adjacent to the NASA Manned Spacecraft Center as a mathematician-programmer involved in simulating the operation of spacecraft systems. He is enjoying his work and living in Houston, Texas. He told me that **Erich Ippen,** who had been going to school in Switzerland, is now back here. I found out that Erich is in graduate school at the University of California at Berkeley and that he is getting married now, but I have been unsuccessful so far in trying to contact him. . . . **Art** and Becky **Samberg** are the proud parents of a boy, Jeffrey. Art is attending the graduate school of business at Columbia University in New York City and will receive his M.B.A. in January. . . . **Jan T. Hyde,** who received his M.B.A. from Harvard last June and has been working for Hurd & Company in New York City, is getting married to Miss Phyllis Shapiro of South Bend, Ind. Jan met her in Boston where she was working at Harvard's Medical Research Lab, after having graduated from Northwestern University. Jan and Phyllis will be living in Brooklyn Heights in New York City. . . . Ed Linde and the reunion committee have asked me to announce that our first reunion will be held on June 10th and 11th at the White Cliffs of Plymouth. You can look forward to beach, pool, tennis courts, golf, and bar facilities. We will be asking for $5 dues in the immediate future—a mere pittance in view of the chance to meet in congenial surroundings with the most significant group of graduates since 1861—**Jerry Katell,** Secretary, Oceanic Properties, Inc., One Bush St., San Francisco, Calif. 94104

'63

Some more notes from the post cards you returned to me: **Ed Dudewicz** now has two sons. He recently received his M.S. from Cornell and is now working on his doctoral thesis in statistics while on an NSF fellowship. . . . **Allan Tobin** is a tutor in biology at one of the Harvard houses while working on his Ph.D. . . . **Bernie Slosberg** is now married to the former Susan Abramowitz and is working toward a Yale Ph.D. while at the Harvard-M.I.T. Joint Center for Urban Studies. That's reciprocity for you. . . . **Charles Schumacher** is living in Newton Center and is with the Corporate Planning Department of New England T & T. . . . **George Bryant** has returned from the Peace Corps in Peru and is now in Boston with Campbell, Aldrich and Nulty, an architect firm. . . . **Paul Fishbane** now has his M.A. in physics from Princeton. . . . **Neal Tornberg** has co-authored a piece in the *Journal of Applied Physics*. . . . **Arthur Krewinghaus** has received his Ph.D. in Chemical Engineering and is now with the Shell Development Company's Research Center at Emeryville, Calif. . . . **John Yules** is teaching oceanography and astronomy on the world's only floating college campus, the M.S. Seven Seas, floating arm of Chapman College, Orange Calif. . . . **Paul Heckel** was pictured in *Fortune* as one of three who figured out a system for calling free to any phone in the U.S. and some in Europe.—Send any news to **Bob Johnson,** Secretary, 245 E. 19 St. 11-J, N.Y., N.Y. 10003

'64

Much of the news this month is from information sent in by those who contributed to the Alumni Fund, and is as follows: **Mark Alpert** is continuing at Stanford Business School after two years of high marks and continued Fellowships. He took his Ph.D. qualifying exams in August and will attend a pilot doctoral program of the American Marketing Association this year. . . . **J. M. Andrews, Jr.** and a co-author published an article on a microwave phonon experiment in the *Proceedings of the IEEE* last April. He was working in the Physics Department at M.I.T. . . . **Robert Beardsley** is married to the former Susan Reller, Wellesley '66. Bob has passed his general exams for his Ph.D. in oceanography at M.I.T. and is now working on his thesis. They spent the summer at Woods Hole on Cape Cod where Bob worked with the support of a NSF Fellowship. . . . **Thomas Cheek** received his M.S. in EE from Tech this past February. He is now working for M.I.T.'s Electronic Systems Lab as part of Project MAC. . . . **Ernest Cohen** received his M.S. in instrumentation engineering at Case Institute of Technology in June. . . . **Bruce Crocker** is working for Chevron Research Company in Process Design. He is enjoying San Francisco and reports a visit by **Dick Carpenter** last May from Seattle. . . . **Thomas Daniel** returned from the Peace Corps in August and will now attend grad school, possibly with a teaching position. . . . **Max Deibert** gave a report on the beneficial effects of intermittently short circuiting fuel cells to completely oxidize the catalysts at the annual meeting of the American Chemical Society in Pittsburgh last April. . . . **Bruce Delagi** graduated from Purdue in June with an M.S. in bioengineering. He will be working in their bio-medical group starting in December. . . . **Michel Delsol** was married June 11th to Cheslye Larson from Springfield, Pa., and Wellesley. Mike is a Ph.D. candidate in the Department of Metallurgy at M.I.T. . . . **George Harlem** was married in June 1965. He received his MSEE from M.I.T. this past February, and is now an optical systems engineer at Itek Corporation in Lexington, Mass. . . . **Don Hitzl** is now working on his Ph.D. in Aero. at Stanford under sponsorship of the Lockheed Honors Cooperative Program. . . . **Steve Kraysler** is preparing to become an actuary at the John Hancock Life Insurance Company in Boston. He is married to the former Edith Anderson, and their child Coreen is now two years old. . . . **Bill Lakin** was married in August 1965 and is working toward a Ph.D. in math at Chicago. . . . **Doug McCallum** is married to the former Janice Kozyra from Simmons. He received his M.S. this June from the U. of N.C. in the Department of City and Regional Planning. After spending this summer in Bogota, Colombia, on a fellowship from the OAS, he is continuing at

N.C. for a Ph.D. . . . **Dick McEntire** was rooming with **Pete Ordeshook** in Washington D.C. last summer. . . . **John McFarland** has joined the Peace Corps in Bolivia after two years at Harvard in the Economics Department. He is teaching statistics, economics, and English in La-Paz. . . . **Don Mided** returned in June from two years with the Peace Corps in Quito, Ecuador. He was assigned there as an electrification consultant and taught several courses. This fall he is helping with orientation of new recruits going to Ecuador. . . . **Richard Murray** is continuing at B.U. for a Ph.D. in social psychology after getting an M.S. this June. He is married to the former Gail Griffith of Wheaton College '64. . . . **Barry Pearlstein** has been working for Hughes Aircraft Company in Calif. for the past year and a half. His wife Marlene and he now have a two-year-old son Howard as well as their five-year-old daughter Beth. . . . **John Rainier** was married this June 18th to Nancy Ellen Fitch of Worchester, Mass. She is a secretary at M.I.T.'s Graphic Arts shop and a graduate of Denison U. in Granville, Ohio. . . . **Mrs. Martha (Harper) Redi** received her M.S. in physics from Rutgers in June and is continuing there for her Ph.D. . . . **David Saarela** is flying as bombardier-navigator in a Grumman Intruder aircraft with the Marines. . . . **Paul Sapounakis** has formed with others the Picket Construction Company, which is developing three big housing projects and refining a new approach to urban renewal without relocation. Paul is sec.-tres. and director of design and planning. . . . **Martin Stieglitz** reports that he is getting more and more used to Puget Sound, and especially to his Boeing paycheck! He has been in contact with **Dick Carpenter,** who is also in the area. . . . **Ken Suchan** returned from two years with the Peace Corps in Tunisia this July. . . . **Charles Tyler** received his M.A. from Washington U. in St. Louis this June. . . . **Charles Wayne** and his wife Barbara from Wellesley '66 are in Korea with the Army.—I'll have more next month. Let me hear from you. **Ron Gilman,** Secretary, 202A Holden Green, Cambridge, Mass. 02138

Graduate Students

V

Robert Gleason had a teaching career in mind when he entered the Graduate School with an A.B. (1954) and M.S. (1956) from Middlebury College. When he was awarded the doctorate in January 1960 he joined the staff at Middlebury College, Middlebury, Vt., a co-educational Liberal Arts college. When I last heard from him he was an assistant professor of chemistry, devoting the academic year to teaching and his summers to research. He and his wife are ski enthusiasts, enjoy the outdoor life in Vermont and cordially invite their acquaintances to visit them at 31 Weybridge Street, Middlebury, especially on ski weekends. Bob studied at Middlebury and came to M.I.T. with a master's degree. . . . **Robert L. Cargill** was awarded the doctorate in organic chemistry in 1960 and spent two years as a postdoctoral fellow with Professor Dauben at the University of California, Berkeley. In 1962 he joined the staff of the University of South Carolina as an assistant professor of chemistry. Having worked with Professor John C. Sheehan at M.I.T. his research interests are in the areas of synthetic photochemistry, small ring compounds, thermal unimolecular reactions and natural products. He suggests his colleagues watch the journals for his publications. Incidentally, he has one protege in the graduate school in chemistry at M.I.T. and promises to send others. He came to M.I.T. from Rice University, Texas. . . . **Mario E. Baur** entered Tech with an A.B. and M.S. degree from the University of Chicago in September 1955. Mario was a research assistant and National Science Predoctoral Fellow and completed his doctoral dissertation in the area of dielectric properties of macromolecules in January 1959, under the supervision of Professor Walter Stockmayer. Subsequently, he studied at the Institute of Theoretical Physics of the University of Utrecht, The Netherlands, with a postdoctoral fellowship awarded by the National Science Foundation. In February 1961 he joined the staff of the University of California at San Diego as a research associate working with Professor Joseph E. Mayer and since September 1962 has been an assistant professor in the Chemistry Department at the University of California at Los Angeles. His current research interests are statistical mechanics of the liquid state and of phase transitions, non-equilibrium statistical mechanics, quantum chemistry, dielectric properties of quantum systems, and the physical chemistry of polymers. . . . **James E. Davis,** another one of Walter Stockmayer's group, wrote a newsy letter from Oakland University, Rochester, Mich. Oakland University is affiliated with Michigan State University. Jim was awarded the Ph.D. degree in 1960 and went to the California Institute of Technology under a postdoctoral appointment to work in the field of virus biochemistry with Professor R. L. Sinsheimer (M.I.T. 1941—or so). The pleasures of a smooth-running research setup and year round tennis resulted in a four-year stay. In September 1964 he joined the staff of Oakland University as an assistant professor of physical biochemistry. Oakland University has recently become completely independent of Michigan State, and Jim says it is a very exciting place to teach. The University is too young to have developed any traditions, and the staff has complete freedom and opportunity to try new teaching methods and to develop a curriculum. His research under an N.I.H. grant is termed virus replication. On January 28, 1966, he married Doralene McNelly, a soprano and music teacher in Detroit. Doralene was formerly soloist with the Roger Wagner and Robert Shaw Chorales and one of the prima donnas of the Detroit Opera Guild. Jim came to M.I.T. as a candidate for the doctorate from Mississippi State College. . . . **Richard B. Toothill** B.S., Lehigh, 1958; S.M., M.I.T., 1960; Ph.D. in Organic Chemistry, University of Delaware, 1964, is now with the American Cyanamid Company in Bound Brook, N.J. His home address is 612 Greenbrook Road, North Plainfield, N.J. Prior to his admission to M.I.T. in the fall of 1958 he was employed by the Rohm and Haas Company summers (1954-1958) as a chemist and chemical engineer and for two years after the award of the S.M. degree was employed by the Hercules Powder Company where his main duties were the demonstration of Hercules products in potential customer's mills and later as a chemist in product development of rosin-based paper sizing agents. Dick wrote a personal note in which he said he is looking forward to reading the alumni notes in the *Review*, and he would like to hear from his friends at M.I.T.—Professor Leicester F. Hamilton, '14, M.I.T. 4-258

XII

John S. Stevenson (XII Ph.D. '34) is now Chairman of the Department of Geological Sciences at McGill University (Montreal) and reports that there are three other professors in his department with Ph.D.'s from Course XII—**Alfred J. Frueh, Jr.,** (XII B.S. '42, S.M. '47, Ph.D. '49), in crystallography; **Vincent A. Saull** (XII Ph.D. '52) in geophysics; and **Roger Webber** (XII Ph.D. '55) in geochemistry. . . . **Henry Faul** (XII S.B. '41, Ph.D. '49), until recently on the staff of the Graduate Research Center of the Southwest (Dallas), has been appointed Head of the Department of Geology at the University of Pennsylvania. . . . **Irving A. Breger** (V S.M. '47, XII Ph.D. '50), geochemist with the U.S. Geological Survey, recently received a Guggenheim Fellowship and will spend a year at the Commonwealth Scientific and Industrial Research Organization (CSIRO), Division of Coal Research, Sydney, Australia. He plans to continue his research on the origin of coal and petroleum in relation to environments of deposition. . . . **Mead L. Jensen** (XII Ph.D. '51), formerly Associate Professor of Geology at Yale, has been appointed Head of the Isotope Geology Laboratory at the University of Utah. . . . **Leonard F. Herzog, 2nd** (XII Ph.D. '52), is Associate Professor of Geophysics at the Pennsylvania State University and also President and Chairman of the Board of Nuclide Corporation, in State College, Pennsylvania, a company he himself founded. . . . **Virginia M. Ross** (XII Ph.D. '53), who is the wife of M.I.T.'s new Head of Chemistry, Dr. **John Ross** (Ph.D. '51), reports that she intends to resume her research and writing in geochemistry and biophysics as soon as she can get her family settled in their new home in Lexington. . . . **Stephen M. Simpson, Jr.** (XII Ph.D. '53) has formed his own company, Simpson Programs, for selling computer programs. He operates from his home address at P.O. Box 368, Duxbury, Mass. . . . **Leonid B. Azaroff** (XII Ph.D. '54), for-

merly Professor of Metallurgy and Acting Director of the Department of Metallurgical Engineering at the Illinois Institute of Technology, was recently appointed Director of the new Institute of Materials Science at the University of Connecticut. The Institute plans to expand graduate education and research in the materials science field. . . . **Robert M. Quigley** (XII Ph.D. '61) is now Associate Professor on the Faculty of Engineering Science of the University of Western Ontario (London). He also is doing consulting work in soil engineering. . . . **Lloyd R. Breslau** (VI and XII S.B. '57, XII S.M. '59, XII Ph.D. '64) is now at the SACLANT ASW Research Center, La Spezia, Italy, where he is carrying on seismic investigations of the Mediterranean sea bottom in connection with his duties at the Center. . . . **Peter C. Beamish** (XII S.M. '64), who has been teaching physics at Phillips Academy (Andover), plans to resume graduate work towards a Ph.D. in oceanography at the University of British Columbia this fall. . . . **Donald H. Carlisle** (XII S.M. '65) is now working on an MBA in the Graduate School of Business at the University of Chicago.—Professor Patrick M. Hurley, '40, M.I.T. 54-1120

Sloan Fellows

Colby H. Chandler, Assistant Manager of Color Print and Processing, Eastman Kodak Company, Rochester, N.Y., has been elected president of the Society of Sloan Fellows. He was formerly Society secretary. A member of the 1963 Sloan class, he succeeds **William S. Crowley,** '59, Plant Manager, Campbell Soup Company. New vice-president of the Society is **William G. Kay,** '63 a Vice-president (Frozen Food Division) of Pepperidge Farm, Inc., Norwalk, Conn. Mr. Kay was also elected a governor of the Society. Elected both Society secretary and a governor was **Robert A. Sherman,** class of 1955, Comptroller of Kodak Park Works, Eastman Kodak Company, Rochester, N.Y. The new Society treasurer and also a governor is **William S. Wheeler,** '54, Senior Staff Associate, Arthur D. Little, Inc., Cambridge, Mass. Other Society governors elected were: **Eric W. Lange,** '62, Quality Control Manager, Ford Motor Company, Chicago, Ill.; **Paul H. Rosenberg,** '52, President of Reynolds Electric Company, River Grove, Ill.; **Goff Smith,** '53, Vice-president, Amsted Industries, Inc., Chicago, Ill.; **James F. Walsh,** '56, Administrator Hardware Systems Engineer and Implementation, Radio Corporation of America, New York, N.Y.; **Hugh E. Witt,** '57, Deputy to Assistant Secretary of the Air Force, the Pentagon, Washington, D.C.; and **Gerrit Lydecker,** '66, who is with Union Carbide Corporation in Otawa, Ill.

Joseph W. James, '64, has been appointed manager of product planning and chief engineer of Chrysler Corporation, Plymouth Division.

Club News

M.I.T. Alumni Council: Ferment in Education

Jerome B. Wiesner, M.I.T.'s new Provost, was principal speaker at the 388th meeting of the Alumni Council at the M.I.T. Faculty Club on October 24. Dr. Wiesner reviewed a number of changes in educational programs and curricula which now benefit M.I.T. students and—in many cases—their colleagues in colleges throughout the nation. Among these are the increasing involvement of students in research activities, the growing success of educational films which have "come of age" under the stimulous of M.I.T. developments, the increasing application of computers to the teaching process, and the increasing rigor of scientific thinking which is entering into new curricula throughout the Schools of Science and Engineering.

During the meeting 19 Boston-area Alumni were honored by Philip H. Peters, '37, Chairman of the Alumni Fund Board, for their "outstanding performance" for the 1966 Alumni Fund. The honors were to six special gifts chairmen: John J. Fahey, '29; James L. Baird, '40; Stanley W. Warshaw, '44; Jack W. Rizika, '47; Vincent A. Fulmer, '53; and Lloyd D. Brace, Jr. '56; and to eight regional chairmen: Robert D. Taylor, '41; Donald N. Adler, '44; Claude W. Brenner, '47; Howard L. Levingston, '51; Theodore H. Korelitz, '56; Daniel L. Brown, '55; Thomas H. Farquhar, '60; and Richard H. Spencer, '57.

Association of M.I.T. Alumnae: Plan Christmas Sale; Professor Bruce Mazlish at Luncheon

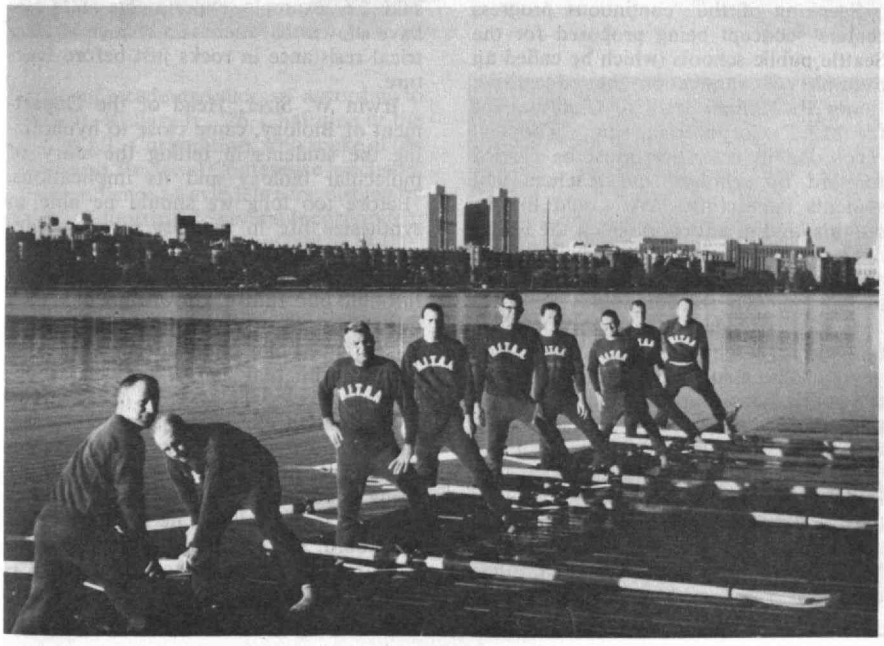
A.M.I.T.A.'s annual Christmas Sale will be held in the Bush Room, December 5, from 10 a.m. to 6 p.m. Gifts, books, Christmas decorations, and baked goods will be offered, along with coffee and sandwiches.

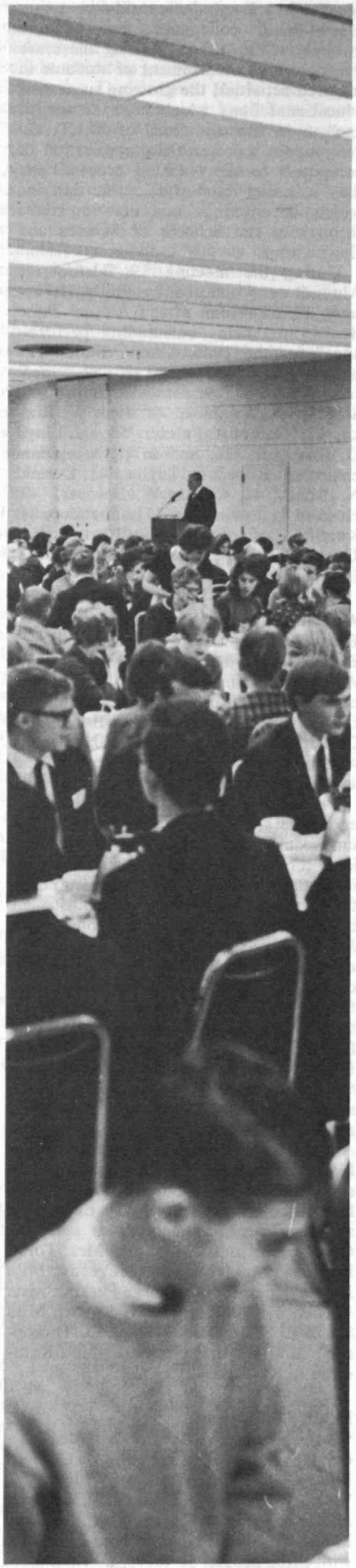
Professor Bruce Mazlish was the speaker at the October 29, 1966, A.M.I.T.A. luncheon at Endicott House. The historian's topic was "The Fourth Discontinuity," that is, the temporary dichotomy between man and the machine, illustrated by frighteningly apt quotations from *Erewhon* and *Frankenstein*. Classic examples of earlier adjustments to a changed concept of the world were those set in motion by the discoveries of the astronomers, the biologists and the psychoanalysts. The full article is to appear in the next issue (Winter 1967) of *Technology and Culture*. Endicott House provided a handsome autumnal setting and noteworthy meal for the approximately 20 guests. Among the alumnae (and alumni) were Dean Emily Wick, Miss Madeline Anderson, Miss Margaret Coleman, Miss Winifred Cunningham, Miss Mary Elder, Mr. and Mrs. Lloyd Kannenberg, Mr. and Mrs. George E. Kimball, Mr. and Mrs. Torsti Kulmala, Mrs. Robert MacCready, Miss Julieta Moran, Mrs. George Perkins, Mrs. Burnett M. Pitt, Mrs. J. M. Skricki, Miss Susan E. Schur, Dr. Dorothy D. Thompson and Mrs. Alfred Wypler.—Mrs. Katherine A. Kulmala

M.I.T. Club of Boston: "Three people, an office, a bright idea"

On November 10th the M.I.T. Club of Boston was addressed by William M. Wolf, '56, President of the Wolf Research and Development Corporation, Concord, Mass. Mr. Wolf described how he started with three people, an office, a bright idea, and an obsolete computer ten years ago

Nine Alumni attending the September Alumni Officers' Conference stole out at dawn on September 10 to inaugurate the new Pierce Boathouse: William J. Grant, '48, cox; John W. Westfall, '34, stroke; Robert W. Blake, Jr., '41; Richard J. Millman, '62; Forest C. Monkman, Jr., '51; Breene M. Kerr, '51; Thomas W. Folger, '48; William C. Howlett, '49; and Robert J. Uhl, '50.





The World of Tomorrow in Seattle Today

Its 1,000 visitors made the 1966 Northwest Regional Conference an "unprecedented success"

By Francis E. Wylie

Seattle takes science and education very seriously. The graceful fairyland Gothic arches of the science Pavilion built for the Seattle World's Fair still attract crowds of visitors to see dramatic representations of the atom, the molecule, and other wonders of science.

The same kind of crowd made the M.I.T. Northwest Regional Conference in the nearby Opera House (also on the Seattle Center grounds) an unprecedented success on October 29. Visitors from Cambridge were gratified by a turn-out of some 350 Alumni, their wives, and guests; but they were stunned by the enthusiasm of more than 600 high school boys and girls, with more than 100 teachers who came from 60 schools all over the state of Washington, in Portland, and in Vancouver.

The attendance resulted from a good deal of work by many Seattle Alumni and by the willingness of a number of industries to help cover the costs of a special luncheon for the students. Their enthusiasm and eager attention proved that they —like the rest of the audience—were avid learners.

Speaking of the "continuous progress centers" concept being proposed for the Seattle public schools (which he called an example of innovation in education), James R. Killian, Jr., '26, Chairman of the M.I.T. Corporation, said, "The real revolution in education must be carried forward by scholars and teachers and students interacting." We would like to see this kind of effort, in which the forces of industry, education, and government are working together, "multiplied across the nation," Dr. Killian said.

M.I.T.'s President Howard W. Johnson told the high school students that "there never has been such a spirit of excitement for young people in this country." Make the most of "the adventure of learning," he said.

Most of the conference discussion topics had special appeal for people in Seattle—air transportation, earthquakes, education and city planning. Thornton A. Wilson, '53, who has just been made executive vice-president of the Boeing Company, was moderator and gave the program unity through his concise introductions.

Secor D. Browne, Associate Professor of Flight Transportation, speaking on "Transportation Systems of the Future," quickly won the audience by debunking with good humor the pedantry of technical terminology ("P.O.V. simply means privately operated vehicle") and giving sharply focused analysis of the possibilities and limitations of aircraft and other means of transportation in the future.

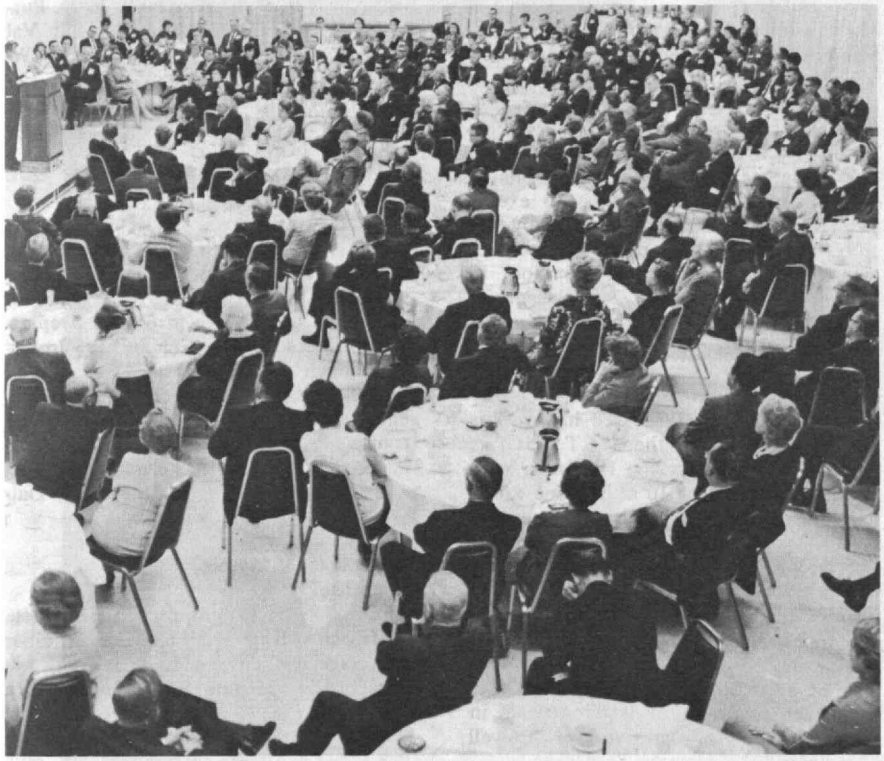
John E. Burchard, '23, Emeritus Dean of the M.I.T. School of Humanities and Social Science and now Acting Dean of the College of Environmental Design at the University of California (Berkeley), took a hard look at the problems of the city. It is not enough to make a city beautiful, he said. Beauty would not solve the problems of Watts, Calif. On the other hand, efforts to achieve urban beauty cannot be postponed until all social ills are solved—"this may well mean deferring forever. The two things need to march hand in hand, not in series. If we are not to traffic in small and in the end useless modifications and patching, we shall have to conduct very large experiments, prodigal in money and manpower, and employ all the resources we have. Surely the time has passed when we can expect to repair our existing cities with string and glue."

All of the high school students had lunch together in one big room ("This is one of the most impressive sights I have ever seen," said one M.I.T. visitor, looking at their intelligent, eager faces) and they listened attentively as Dr. Killian and Professor Browne spoke to them informally about what they would find when they went to college—and especially if they went to M.I.T.

At the beginning of the afternoon session, Frank Press, Head of the Department of Geology and Geophysics, talked about earthquakes, about the prospects for scientific exploration of the moon, and about the excitement ahead in oceanography. There is encouraging progress in research toward earthquake prediction, he said. For example, experiments at M.I.T. have shown that there is a change in electrical resistance in rocks just before fracture.

Irwin W. Sizer, Head of the Department of Biology, came close to hypnotizing the students in telling the story of molecular biology and its implications. "Before too long we should be able to synthesize life in the test tube and detect its presence elsewhere in the universe," he said. "The prospect that through our future knowledge of DNA we will be able to control human heredity is an awesome one indeed, and one fraught with real danger as well as opportunity."

Dr. Killian closed the afternoon's session with a review of significant new developments in education, especially those being conducted by Educational Services Incorporated, of which he is chairman of the board. He concluded with a demonstration using taped excerpts from Cicero's orations as recorded for the new



"An unprecedented success" according to James R. Killian, Jr., '26, Chairman of the M.I.T. Corporation, who spoke at the Northwest Regional Conference luncheon; an audience of avid learners; display by Educational Services Incorporated; Howard W. Johnson, President of M.I.T., at the conference banquet and greeting high school visitors; and principal conference planners—Jacob A. Samuelson, '40, Thornton A. Wilson, '53, and James W. Barton, '39.

PHOTOS: JOHN BODISH, BOEING COMPANY

Social Studies Curriculum Program now being used in teaching 1,500 junior high school students in 17 states.

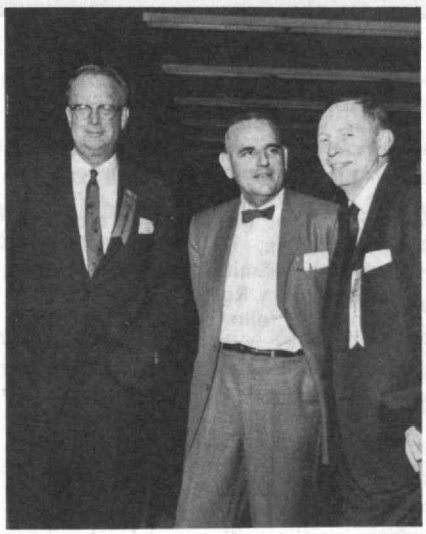
The high school students went home, but the Alumni and their guests stayed on for a reception and dinner. H. W. McCurdy, '22, honorary chairman, had arranged a unique introduction for the speaker, Howard W. Johnson—a nine-minute color film of the President's recent inauguration, made especially for the occasion by his classmate, Oscar H. Horovitz, '22, of Newton, Mass.

"My colleagues and I have looked forward to this occasion as an attempt to transfer this small but working model of M.I.T. 3,000 miles from Cambridge to the M.I.T. conference in Seattle," the President said. "Thanks to the planning of your committee, this mood, spirit, and intellectual excitement has been accomplished; and I should like to acknowledge here your hard work in the planning of this day, and to salute all of you for joining us in participating in this regional conference. It goes down in history as one of the best."

In his banquet speech President Johnson told the Alumni and their guests that "a superior college education should offer to the student the serious and taxing challenge that comes from a confrontation with a broad-gauged but serious, professionally oriented community.

"This confrontation takes place by stretching the mind of the student with advanced material in the classroom and, most importantly, by the opportunity he has to be treated as a mature adult in the company of more seasoned graduate students as well as his peers."

Jack A. Samuelson, '40, did a masterful job as general chairman of the conference, with James W. Barton, '39, as deputy chairman. Many Alumni were involved in the planning; other members of the committee were Andrew T. Hengesteg, '55, President of the M.I.T. Club of Puget Sound, Hans J. Bebie, '39, Arnold G. Gangnes, '46, Otto E. Kirchner, '49, Hua Lin, '55, Carl R. Meurk, '42, Charles H. Norris, '31, Martin M. Anderson, '56, Gordon N. Davison, '55, and Russell E. Winslow, '40.



which, by shrewd manipulation, sound judgment, and good luck, he has parlayed into his present-day organization of 300 people spread out in a number of offices from coast to coast. At its next meeting on December 8th the Club will hear Professor Douglas P. Adams, noted authority on Boston history and mythology.—Eugene M. Darling, Jr., Secretary-Treasurer

M.I.T. Club of Fairfield County:
Practical Laser Application Demonstrated

The M.I.T. Club of Fairfield County had its fall meeting at the Clam Box in Westport on November 1, 1966. The guest speaker was Mr. John Cunniff, Director of Engineering of the Electronic Products Division of the Perkin-Elmer Corporation. The subject of the talk was "Lasers—Application Present and Future". Mr. Cunniff demonstrated two continuous wave helium-neon gas lasers along with associated accessories which are making the lasers useful tools rather than exotic toys. Practical application to civil engineering type problems were demonstrated.—Leonard F. Glancy, Secretary, 17 Woolsley Avenue, Trumbull, Conn.

M.I.T. Club of Western New York State:
Plan Christmas Luncheon; New Students Welcomed

The M.I.T. Club of Western New York State invites M.I.T. students, their fathers, and all alumni of Western New York to the annual Christmas Luncheon on Wednesday, December 28, at 12:00 p.m., location to be announced. For reservations call Donald Ferguson 852-2010/NF3-9120 or Paul Julien 754-7654/278-2581.

The Club sponsored a get-acquainted luncheon on June 25 honoring students who were to enter M.I.T. this fall. The invitation list included 10 entering students and their fathers, 33 current students, 13 Education Counselors and 12 Directors of the Alumni Club. The luncheon was held on Saturday in the week of local high school commencements. We enjoyed punch and tomato juice for a half hour, then sat down in groups of five or six to a lunch of roast beef expertly served in an air-conditioned restaurant. Club President, Paul Julien of Niagara Falls, welcomed the students on behalf of the 340 alumni of the Institute who live in the Western New York area. Educational Counselor Burns Gregg pointed out that the educational counselor continues to be interested in the progress of "his" students throughout their career at M.I.T. and to some extent after that. Student Peter Jax of Springville, N.Y., who has attended classes in two of the new buildings, noted that they provided a pleasant, inviting atmosphere, and the seating arrangement in his classrooms had encouraged more student contribution to the learning process. Wendell Bishop, a student who plans to enter M.I.T. this fall, has written his thanks for this opportunity to become acquainted with some alumni and students and to talk about the school, its pleasures and its problems. All present agreed that it was a constructive and enjoyable event. We look forward to a similar gathering next Spring.—Club Secretary, Donald R. Ferguson, 333 Ellicott Street, Buffalo, N.Y. 14203

M.I.T. Club of Central Pennsylvania:
Get-acquainted Outing at Dillsburg

The M.I.T. Club of Central Pennsylvania held a student-alumni outing on September 1st at the Robert E. Smith residence in Dillsburg. The setting was ideal for our purposes, being beautifully situated at the northern edge of the Blue Ridge mountains. Some of the thirty people attending this made use of swimming and golfing facilities at the Range End Country Club, adjacent to Bob's home. These were offered at no cost. All M.I.T. students and entering freshman were invited and were to, in turn, ask their fathers to come. This provided an excellent opportunity for them to get to know each other and talk over school matters among themselves as well as to meet local alumni.—John A. Morefield, Jr. (1956), Secretary-Treasurer

M.I.T. Club of Washington:
Seminar on Management

Save the date: February 18, 1967 . . . . . For an all-day seminar on Technology's Impact on Management, at which faculty from the Alfred P. Sloan School of Management will lead discussions of new topics of special interest to executives. Details will be announced by the club as soon as the plans are settled; meanwhile, write for information to Lawrence W. Conant, '21, Greenbrier Apartments, 4301 Massachusetts Avenue, N.W., Washington, D.C. 20016

M.I.T. Club of Southwest Florida:
Gemini Telemetry Discussed in Sarasota

The first meeting of the M.I.T. Club of Southwest Florida for the 1966-67 season was held on October 10 at Martine's Restaurant, Sarasota. The dinner was followed by an illustrated talk by David A. Eberly, '49, General Manager of the Sarasota EMR Plant, on "Telemetry in the Gemini Space Vehicles." While Dave's talk disclosed no secret data, it was an eye opener to most of those present, pointing out as it did what enormous strides have been made in the last ten years in electronics and miniaturization.—Lowell L. Holmes, '23, Secretary-Treasurer

M.I.T. Club of Florida West Coast:
"To Raise the Level of Public Education"

A stag dinner and business meeting was held at the Country Villa Restaurant in Pinellas Park on October 28. Sixteen members were present. After the treasurer's and membership status report, the group acknowledged the loss by death during 1966 of the following members: Charles Belden, '09; Eugene Marceau, '12; Clarence Smith, '14; John Teeter, '22; and Charles Rogers, '28.

Discussion followed, regarding plans for the winter meeting. An educational theme was tentatively chosen, with the objective to exert an effort "to raise the level of public education, especially to give the secondary school student better preparation." (for college and life), to quote Jim Athan, Club President.

It is planned that the one to two day winter meeting will attract local university, college, and secondary school teachers and administrators. The possibility of making the meeting a joint affair with the local Harvard Club is being explored.

A report was heard from Harold Radcliffe, '41, regional educational council head, who called attention to the very low 2.3% of last year's freshmen who dropped out because of academic failure. He further noted that last year every student who applied for financial aid did receive it in forms of scholarships or low cost loans.

The members unanimously voted on annual club dues of $3, covering the cost of a copy the All Florida Alumni Register, which supply is not yet exhausted. Single copies to anyone in the U.S.A. will be sent post paid on receipt of 75¢, or 50¢ per copy in lots of five or more.

Members present were: Jim Athan, '54; Clinton Conway, '24; Glenn Fargo, '21; Donald Robison, '46; Harold Radcliffe, '41; R.W. Caldwell, Jr., '43; P.N. Risser, '63; E. R. Lindsay, '60; E. D. Purdum, '48; C. D. Mackintosh, '22; Val Gooding, '16; R. S. Rowlett, '16; L. W. Powers, '32; A.M. Holcombe, '04; Edward Depoyan, '30; and Donald Burke, '46.—Eugene D. Purdum, '48, Secretary-Treasurer

M.I.T. Club of Dallas:
M.I.T. Professor Speaks at Dinner

M.I.T. Professor William H. Dennen, '42, spoke November 1 at a dinner meeting for the members of the M.I.T. Club of Dallas and their wives. From the Department of Geology and Geophysics, Professor Dennen spoke on "The Beginnings of Things" and included such topics as current ideas on the origin of our world and its universe and data supporting these current concepts.—Les Ackerman, '48, Secretary-Treasurer, 721 South Austin, Dallas, Texas

M.I.T. Club of Mexico:
Fiesta 1967

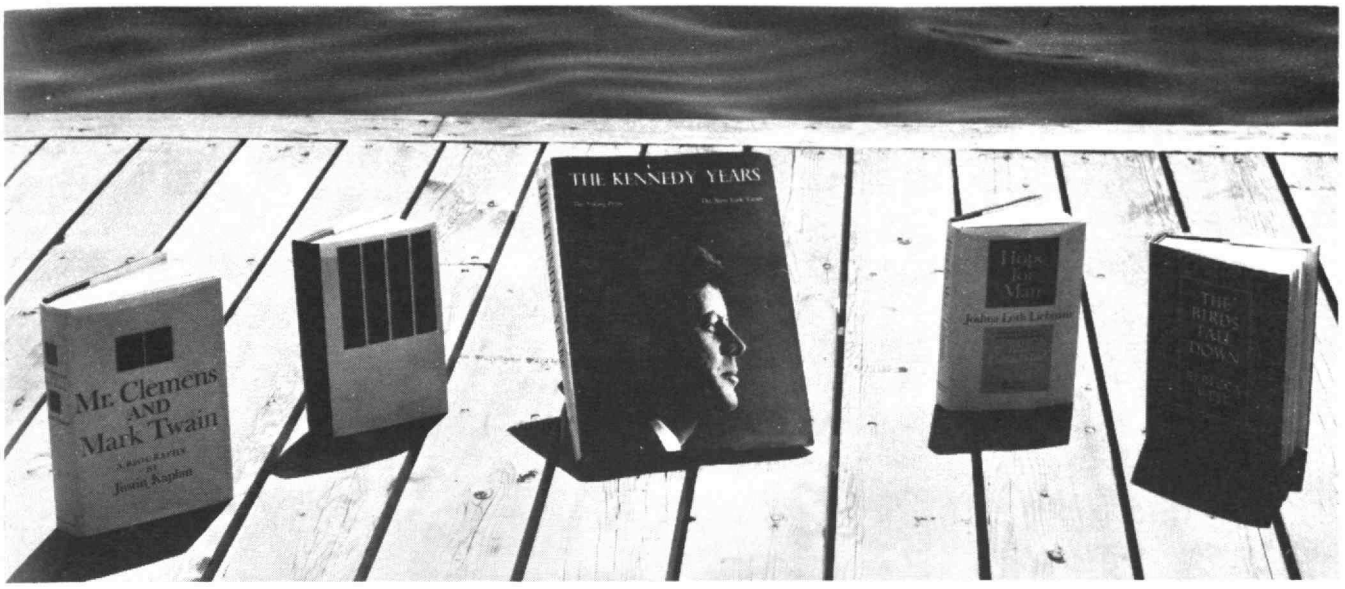
Features of the 19th annual M.I.T. Fiesta in Mexico will be tours to Mexican cities and museums, Mexican barbeque, address by Dr. Jerome B. Wiesner, and a *noche Mexicana*—all from March 9 to 11, 1967. Further details and registration forms are available through M.I.T. club and class officers, and all alumni are welcome.—James J. Rattray, '48, President, Paseo Reforma 116, Mexico 6, D.F.

M.I.T. Club of Northern California:
Science—the Fourth Estate

Three programs on the theme of "Science—the Fourth Estate" are listed in the 1966-1967 program of the M.I.T. Club of Northern California. The first, a review of the Apollo and Gemini projects by Garth Hull of NASA, was in Burlingame, Calif., on November 16.

"The Quest for Peace" will be the topic of Edward Teller of the University of California on February 16; the meeting will be at an East Bay location to be announced.

Howard W. Johnson, President of M.I.T., is due in San Francisco on April 20 for an address on "Education Polarized Around Science;" the location and other details will be announced.—



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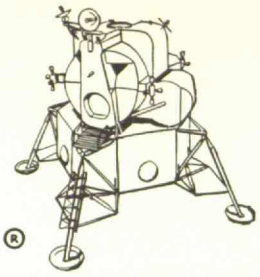

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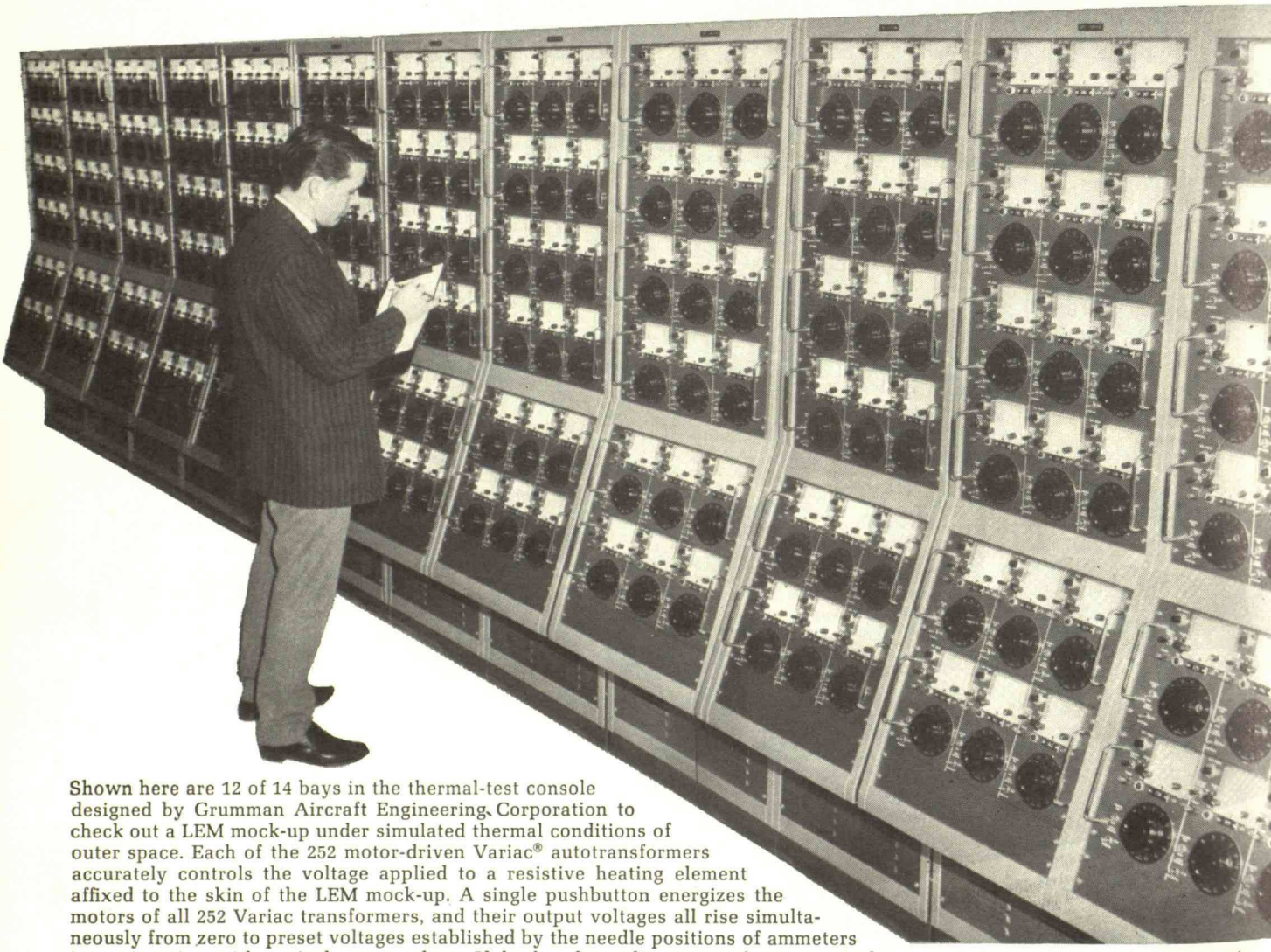

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